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# The Manitoba Medical Review

Vol. 41 APRIL, 1961 No. 4

## Symposium on Trauma

Part 2

### Management of Fractures About The Ankle Joint

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Percival Pott in 1768 long before the advent of roentgenography described a fracture of the inferior extremity of the fibula and of the malleolus of the tibia with outward displacement of the foot. In assessing fractures about the ankle, it is necessary to be much more precise about the nature of the fracture than modern usage of the term "Pott's Fracture" would indicate. It is also very evident that more emphasis should be placed upon the injury to soft tissue as fractures and fracture-dislocations can rarely be separated from ligamentous disruptions about the ankle. These may occur independently of, or be combined with, fractures.

Classification of fractures is suggested as follows:

(a) crack fractures without displacement
(b) external rotation fracture-dislocations
(c) internal rotation fracture-dislocations
(d) adduction fractures
(e) abduction fractures
(f) vertical compression fractures with: (1) anterior dislocation and, (2) posterior dislocation.

In the management of all fractures with displacement, it is essential to apply early splintage to limit movement and thus avoid inflicting continuing trauma at the site of fracture. It is noted that this simple principle is often overlooked in cases referred to the hospital, and also not infrequently patients are transported about the hospital to various departments without adequate splintage. Aluminium splints which are radio-translucent are very useful, and, failing this, a bed pillow with pads and bandages makes an excellent splint for fractures about the ankle. All improvised splints must be well padded. If the patient has to be transported any distance, it is reasonable to reduce the main dislocation by manual traction; a few hours of pressure particularly over the medial aspect of the ankle may produce necrosis of skin and subcutaneous tissue, compounding the fracture and compromising the result of future treatment. The subcutaneous position of bones about the ankle render the occurrence of compound fractures frequent enough, and in these instances the wound must be adequately dressed before splintage is applied.

The reduction of the joint dislocation does not as a general rule present much difficulty. The principle is that the knee should be flexed to relax the tendo-achilles. A firm grasp is then taken of the heel in one hand and the forefoot in the other, and firm, gradual traction is usually effective in restoring the general alignment at the joint. In the event that there is rotation, either medial or lateral, and most frequently the rotational deformity is in the lateral direction, this can also be accommodated for as the traction is applied. Reduction of the joint dislocation should be effected wherever possible within a few hours of the dislocation, and a carefully padded plaster applied, with the foot in the position of dorsiflexion to a right angle and in neutral rotation, so that the foot will fit normally on a flat walking surface. There is usually no indication to rotate the foot into marked internal or external rotation. Plaster should extend in all major dislocations above the knee in order to effect stability at the site of fractures. Below-knee plaster should be confined to cases in which there is no significant joint disruption.

Roentgenographic examination should be undertaken as early as is practicable. This should include antero-posterior, lateral and oblique films. It is a commonplace that two plane views of the ankle are inadequate and will result in overlooking fractures which may be clearly visible in a third plane.

Definitive treatment of fracture-dislocations of the ankle may not be adequately effected by the foregoing methods. Three early complications may require additional measures:

(1) the compounding of the fracture must be dealt with by an adequate 10 minute scrub in the operating room with antiseptic soap, such as hexachlorophine with phisohex compound. Primary suture if possible,
(2) inadequate reduction of the ankle mortise which may appear in the X-Ray film to be widened either medially or laterally or displaced anteriorly or posteriorly,
(3) inadequate reduction of major bone fragments.

The usual complication of inter-position of periosteum in a fracture of the medial malleolus can be cited as the commonest indication for operative intervention. Occasionally a large fragment of the posterior and anterior articular tibial surface may require additional treatment with reduction and internal fixation. However, with respect to the

latter it is frequently possible to align these fragments by closed methods and to obtain a very satisfactory result.

Fracture-dislocation of the ankle is frequently an external rotatory abduction type of fracture which instead of disrupting the lateral malleolus itself, may result in a fracture of the fibula above the level of the ankle joint with disruption of the distal tibiofibular joint. This fracture brings potential instability to the ankle in a lateral direction and in most instances should be dealt with by open reduction and fixation of the lower fibula to the tibia in order to restore stability at this level. It is also likely that where there is a severe displacement in the lateral direction, the deltoid ligament may be severely disrupted and may require operative repair. During the operation it may be found that the margins of the deltoid ligament are folded into the joint and that repair is fully justified.

The most difficult type of fracture to deal with undoubtedly is the vertical compression type of fracture. The mechanism of this fracture is such that the dome of the talus thrusts through the lower end of the tibia resulting in its severe comminution and proximal displacement. In the event that the thrust comes through the os calcis with the foot in dorsiflexion, the force is transmitted through the long axis of the os calcis thrusting obliquely through the anterior portion of the tibia, depressing a large proportion of the articular surface and dislocating the ankle joint anteriorly. When the thrust is effected through the plantar-flexed forefoot, the posterior part of the articular surface of the tibia is compressed proximally and there is a posterior dislocation of the ankle. In either instance a large proportion of the medial malleolus is likely to be involved.

The surgeon who undertakes to reduce this type of fracture by open operation will find that the loss of bone through trabecular compression and comminution, is such that it is virtually impossible to bring the articular surfaces into reasonable alignment. A much more effective method of treatment is by means of a Steinmann pin placed through the os calcis and the application of traction. Following a period of traction, reasonably satisfactory alignment of the joint may be obtained in all but the most severe cases and position may be maintained by incorporating the limb in plaster with the pin in position while traction is continued.

The late complications are chiefly three in number:

(1) non-union of the medial malleolus, usually amenable to treatment by bone grafting methods,

(2) late traumatic arthritis most commonly the result of inadequate reduction,

(3) osteomyelitis associated with compound fractures or sepsis following open operation.

The objective of treatment in fractures and fracture-dislocations of the ankle is re-alignment of the joint with restoration of the ankle mortise and the congruity of the articular surfaces. Where these objectives fail and traumatic arthritis supervenes, arthrodesis of the ankle will in most instances give an excellent functioning extremity. It is the usual experience that arthrodesis of the ankle is more acceptable to men than to women, and the ideal position for fusion is with the foot at approximately a right angle to the leg. This will require the necessity for using flat heeled shoes in all instances.

### Summary

In summary, it can be said that in most instances closed reduction of fracture-dislocations of the ankle will provide a satisfactory result. Certain individual complications will be benefitted by open reduction and adequate internal fixation by pins or screws, carefully applied to suit the individual problem.

### Bibliography

Pott, Percivall: "Fractures and Dislocations"—1768.
Watson-Jones, Sir Reginald: "Fractures and Joint Injuries;" Fourth Edition, Vol. II, 1952.
Banks, Samuel W.: "The Treatment of Non-Union of Fractures of the Medial Malleolus," The Journal of Bone and Joint Surgery; Vol. 31A No. 3, pp. 658-662.

. . . . "I have had three personal ideals. One to do the day's work well and not to bother about to-morrow. It has been urged that this is not a satisfactory ideal. It is; and there is not one which the student can carry with him into practice with greater effect. To it, more than to anything else, I owe whatever success I have had — to this power of settling down to the day's work and trying to do it well to the best of one's ability, and letting the future take care of itself.

"The second ideal has been to act the Golden Rule, as far as in me lay, towards my professional brethren and towards the patients committed to my care.

"And the third has been to cultivate such a measure of equanimity as would enable me to bear success with humility, the affection of my friends without pride and to be ready when the day of sorrow and grief came to meet it with the courage befitting a man." . . . .

Aequanimitas,
Sir William Osler.

# Acute Spinal Injury

Norman C. Hill, M.D.

The purpose of this paper is not to review in detail all the manifestations of spinal injuries, but to elucidate some of the newer concepts in the understanding of how these injuries are produced, and to review in that light the most important principles of their treatment as might be necessary for hospital personnel or physicians to provide.

Injuries to the spinal cord and the surrounding structures have been classified according to their etiology (i.e., flexion injuries, etc.), their x-ray appearance (fracture-dislocation, etc.) or the neurologic deficit produced, depending, it seems, on which service the patient happens to be admitted on their arrival at hospital[1]. It is more important to understand the principles underlying the injury, however, and to apply these principles in every individual case.

### The Importance of a General Knowledge as to the Mechanism by which a Spinal Injury is Produced

One should keep clearly in mind that the injury may be confined to the supporting structures alone (i.e., bone), to both supporting structures and nervous tissue, or most rarely to nervous tissue alone.

Most injuries of the spinal column are produced at the time of injury by sudden hyperflexion of the spine, either in the cervical region or at the thoraco-lumbar region, at which sites the vertebra column is most mobile. Such a movement may injure the spinal cord as a result of a shearing action as segments of the vertebra fracture and dislocate, or as pieces of bone chip off and lacerate the cord, or by the posterior protrusion of a piece of intervertebral disc. In the vast majority of cases when the nervous tissue is injured, it is injured immediately, whether irreversibly or not, and it is very unusual that an extradural clot, or a surgically accessible intra-medullary clot will form as might happen after an injury to the head. It is sometimes true a certain amount of post-traumatic edema will occur however; and it is also true that too long-continued pressure on the cord may produce irreversible changes that were not present initially. The point is, that in the absence of clinical or radiologic evidence of a compressing lesion (see below) or of signs of increasing neurologic deficit, there is usually little to be gained from immediate surgical exploration, for in the great majority of cases the injury has been sustained initially and directly. This conservative attitude toward exploration however, does not exclude the important principle that a severe spinal cord injury should be considered a reversible lesion in the early stages until time proves otherwise. There is no sure way of differentiating a physiologic from an anatomic transection in the first days after injury.

Secondly, while flexion is the usual mode of injury, it is also possible that hyperextension may have been the mechanism of injury. In this case, the spine, usually the cervical portion, is hyperextended, and the cord is compressed between a hypertrophic arthritic spur anteriorly and a thickened ligamentum flavum posteriorly. Not all injuries of the spine therefore should be treated in the hyperextended position, and not all spinal cord injuries are accompanied by a visible fracture or fracture-dislocation[2].

Many injuries of the cervical spine are a result of a combination of hyperflexion and hyperextension, especially when the head is slightly turned at the time of impact. This type of injury may damage ligaments, lamina, and pedicles in such a way that the injury may not be evident on ordinary x-ray examination, and special views in flexion and extension and with special projections may be needed.

Finally, it is useful to remember that a fracture of the cervical region may sometimes be accompanied by a fracture in the thoraco-lumbar region as the body flexes after striking the ground, as after a fall directly on the hyperflexed neck. In addition fractures of the lumbar and dorsal vertebrae may be accompanied by fractures of the bones of the legs and of the calcaneii.

These points should surely emphasize the importance where possible of obtaining a clear history of what has happened.

### The Importance of Careful Physical Examination

One should note the posture of the neck. Tilting of the head to one side, or foreward displacement of the head indicate dislocation. There may be a very prominent cervical vertebra. In dorsal and dorso-lumbar injuries if there is no paraplegia, the patient usually lies in a flexed position; whereas if paraplegia is present the legs are generally limp, and extended outwards and everted. A painful, unduly prominent spine may mark the site of injury.

The patient with quadriplegia or paraplegia has all too painfully obvious neurologic signs. It is useful to recall that in the initial stages, the patient will usually exhibit "spinal shock" or "the stage of muscular flaccidity," with flaccid arreflexic insensitive limbs and trunk. The presence of any kind of a reflex in this stage may be an indication that all is not lost, and these reflexes should be carefully recorded. Similarly the lesion may not be complete at the onset, and a pattern of progression may only be evident if the results of one examination are compared with earlier examinations. Thus a diagram should be made with the level of sensory loss graded 0 (for normal) to –4 (for completely absent), as well as an indication of the muscle

strength graded 0 (for normal) to –4 (for complete paralysis). Careful, repeated, recorded neurologic examination is essential to proper treatment.

Sometimes a characteristic neurologic lesion will occur which may be of great importance in deciding treatment. In the "anterior cervical cord injury syndrome"[3, 4], there occurs a marked weakness below the lesion, with loss of pain and temperature, but preservation of touch and postural sensibility. This may indicate the presence of a surgically accessible mid-line disc. In the "syndrome of acute central cervical spinal cord injury"[5] the patient, usually an elderly man with a bruise on his forehead, has greater weakness in the hands than in the legs, often with a disassociated sensory loss. These frequently improve spontaneously. In the syndrome of a "laterally protruding disc" there may be pain, weakness, and numbness in the distribution of a cervical or lumbar root. Any combination of these syndromes may occur. Therefore, seemingly bizarre neurologic findings should always be carefully noted.

**The Importance of Careful X-ray Examination**

In the acutely injured patient, it may not be possible and is even contraindicated to proceed with complicated x-rays. However, if the patient is maintained with gentle traction to the head in the neutral position, preliminary lateral and AP x-ray of the neck and spine will usually be obtainable. Depending on the results of these x-rays, the examination may be terminated until appropriate treatment is begun, or else it may be possible to proceed with a complete set of x-rays, as outlined below.

It is essential to obtain views of the odontoid portion of the second portion of the cervical vertebra through the open mouth. If possible, oblique x-rays of the cervical spine should be obtained. The shoulder should be depressed so that the lower cervical vertebra may be seen in the x-rays. Finally, it is unwise to speculate about whether a cervical spine x-ray is normal or not; it is better to request the opinion of an experienced person to decide this.

Views in flexion and extension are usually not indicated in the acute stage, and it is wise to defer these examinations until the initial stage of injury is over and the neurologic status of the patient has become perfectly obvious. The possibility of fracture in the dorso-lumbar region in cervical fractures, and of fractures in the legs and heels should be considered.

**The Proper Assessment of the Neurologic and X-ray Findings**

(a) The most common results of these preliminary examinations in that **both neurologic and x-ray examinations are negative.** The patient has a sore back or neck and little else. A diagnosis of sprain should only be made however after proper and complete x-rays have been done including special views. Some subluxations are not evident until films are taken in flexion. Very severe pain, and marked tissue damage can occur with fractures of the transverse process of the lumbar vertebra. However, when these examinations are negative, the simpler the care, the better.

Prolonged rest, physiotherapy, traction and cervical collars tend only to fix the patient's attention on the soft tissue injury. It may be explained that a sprain has occurred, and that it will heal much as any other sprain would; that is, by moderate rest, heat and analgesics.

(b) The next most common injury is **a skeletal abnormality demonstrated by x-ray but with no neurologic disability.** The treatment is predicated on the x-ray findings[6].

Immediate postural reduction, rest and immobilization with or without plastic fixation is usually sufficient for:

1) Compression fracture of the cervical vertebral body.

2) Uncomplicated unilateral subluxation of the cervical spine.

3) Mild or moderate anterior compression fractures of the lumbo-dorsal spine without complications (over 60% of all spinal injuries).

4) Lateral compression fractures of the lumbo-dorsal vertebrae.

Skeletal traction will be necessary for:

1) Unilateral and bilateral dislocations of any of the cervical vertebrae.

2) Fracture-dislocation of the cervical spine.

Direct exploration and reduction will usually be required for:

1) Cervical dislocations which are not reduced by skeletal traction.

2) Fracture-dislocation of the lumbo-dorsal vertebrae.

3) Severe compression fractures and comminuted fractures of the lumbo-dorsal vertebrae.

(c) When there is a **neurologic deficit,** the decision as to treatment is more difficult. At the present time, surgery is considered to reduce a compressing lesion, and occasionally to explore a progressing one.

As mentioned, usually when a severe neurologic deficit is present, it has been incurred immediately, and it therefore follows that even with removal of the offending compression on the nervous tissue there may be no improvement in the patient's condition. However, an attempt is always made to treat such a compression, either to prevent the onset of further neurologic difficulties, or in the hope that some improvement will occur.

The diagnosis of a compressing lesion of the nervous tissue is made on the basis of neurologic examination, x-ray examination, and the response to Queckenstedt testing on lumbar puncture.

As previously stated, a deteriorating neurologic picture or the syndrome of anterior cord compression may indicate that surgical decompression is necessary.

X-rays may show a fracture-dislocation, probably the most common compressing lesion of the nervous system requiring treatment. In the cervical region this is usually treated by skeletal traction using Vinke or Crutchfield tongs. At the T12 level blind attempts to reduce fracture-dislocations may result in a worsening of the neurologic condition and many of these require direct surgical exploration. X-rays may also show a free fragment of bone as the possible basis of symptoms and this is sometimes an indication for exploration.

A lumbar puncture is useful when combined with Queckenstedt testing. A complete block is indicated by failure of the pressure in the manometer to rise on jugular compression, and an incomplete block by a slow rise in the manometer and then a slow fall. Such a test is useful when there is no obvious x-ray evidence of compression, but unfortunately the test is not always reliable and cannot be the sole criterion for operation.

Most surgical procedures directed at the spinal column will of course be done only under the most ideal circumstances. Occasionally however, it is necessary to introduce Vinke or Crutchfield tongs before the patient is moved or while other emergency procedures are performed. Care should be taken not to penetrate the skull too deeply, and the tongs should be placed under aseptic condition to avoid brain abscess and osteomyelitis. They are placed in the parietal area slightly posterior to a line drawn connecting the external auditory meati. It is best to start with heavy traction, meanwhile taking serial x-rays to determine whether reduction is occurring. The weight can then be lessened. One should remember that a dislocation which is easily reduced may easily re-dislocate.

### The Importance of Careful Nursing in the Early Stage of Spinal Injury[7]

(1) An unconscious patient may not be able to indicate that he has a painful neck or back. The possibility of a spinal injury should be remembered when dealing with an unconscious patient.

(2) When transporting the patient, the head should be maintained in the neutral position with constant gentle traction, not fully hyperextended. A folded blanket under the back while transporting patients with injuries to the thoracic and upper lumbar vertebra will provide sufficient emergency reduction in these cases. When turning the patient, at least four attendants are necessary, one to hold the head in gentle traction, and three to turn the body, meanwhile keeping leg, spine and head in a straight line.

(3) If the patient is paraplegic or quadraplegic, (a) he must be turned every two-to-four hours, day and night, by adequate staff or on appropriate frame. This must commence at the time of injury. Back care and care to the skin are essential. Hard gauze doughnuts are not useful. **Bed sores may develop within two hours from the time of spinal injury.** (b) Immediate attention must be given to the urinary bladder. In the stage of spinal shock, irreversible damage may be done, as the bladder distends with urine. Tidal drainage is not essential. Insertion of a penile catheter with intermittent drainage and irrigation is sufficient in the early stages. The fact that urine appears spontaneously in a paraplegic patient is no indication that the bladder is functioning properly.

**(7) In summary therefore, in each case of spinal injury:**

1. An effort should be made to determine the mechanism by which the injury occurred.
2. Neurologic examination should be done early, repeated frequently, and recorded carefully.
3. X-rays should be adequate and properly interpreted.
4. The patient must be handled properly in the first hours after spinal cord injury or months of disability may result.
5. Early surgical treatment may be required for patients with compressing or progressing lesions; thus a thorough understanding of the basis for diagnosis of these conditions is necessary.
6. Minor injuries should not be aggravated by over-zealous treatment.

#### Bibliography


1. Birkett, A. N.: Injuries and derangements of the spinal column. Modern Trends in Orthopedics. London. Butterworth & Company, 1950.
2. Taylor, A. R.: The mechanism of injury to the spinal cord in the neck without damage to the vertebral column. J. Bone & Joint, Surgery, 33-B: 543, 1951.
3. Schneider, R. C.: A syndrome in acute cervical injuries in which early operation is indicated. J. Neurosurgery, 8: 360, 1951.
4. Schneider, R. C.: The Syndrome of Acute Anterior Spinal Cord Injury. J. Neurosurgery, 12: 95-122, 1955.
5. Schneider, R. C., Thompson, J. M., Bebin, J.: The Syndrome of Acute Central Cervical Spinal Cord Injury. J. Neurosurgery & Psychiatry. 21: 216-227, 1958.
6. De Palma, A. F.: The Management of Fractures & Dislocations. An Atlas. Philadelphia. W. S. Saunders & Company, 1959.
7. Pool, J. L.: The Neurosurgical Treatment of Traumatic Paraplegia. Springfield, Ill. Charles C. Thomas, 1951.

# Trauma and the Genito-Urinary System

Earl K. Vann, M.D., F.R.C.S.(C)

Trauma relating to the genito-urinary system may involve one or several parts of the system. Injury may be from a direct or indirect source, as from a fall or a sudden change in position, or in change of motion. Severe damage to the kidneys must be anticipated and prevented when possible in all cases of severe shock and extensive tissue damage. (Lower nephron nephrosis, crush syndrome, etc.).

For the purpose of this discussion "Trauma" will be confined to physical injury. Thermal, chemical, toxic and x-radiation factors cannot be included in this discussion.

## Renal Injuries

Kidney damage must be suspected in all cases of trauma to chest, abdomen or back, whether penetrating, perforating or external. Injury to the kidneys is brought about by one of the following mechanisms:

1. **Direct force.** These are usually non-penetrating injuries, also termed subcutaneous or subparietal in which there is often no external evidence of injury, except at times an ecchymosis or abrasion of the skin over the iliocostal space or over the corresponding upper abdominal quadrant.

2. **Penetrating injuries** in which there is an external wound of entrance over the region of the kidney or in close proximity to it.

3. **Spontaneous rupture** of the kidney, usually associated with some underlying pathology, e.g. pyelonephritis, stone, tumor, etc.

4. **Injuries of the kidney** following ascending urography and renal biopsy.

The most frequent renal trauma is initiated by direct force exerted from the front, from the side, or from behind. Injury from indirect force occurs in sudden falls on the feet or on the buttocks.

## Types of Renal Injury

Closed injuries to the kidney vary from slight subcapsular hemorrhage to complete parenchymal disruption with or without injury to the hilus. Injury to the tissues surrounding the kidney may occur without damage to the capsule or to the renal parenchyma.

Simple contusions occur frequently. Local signs and symptoms with transient hematuria may occur. If the kidney capsule ruptures, either limited bleeding or extensive hemorrhage may occur. There may be impaired renal function following trauma, and intravenous opaque media may not concentrate in sufficient degree to become diagnostic. The ureter or kidney pelvis may become obstructed resulting in the absence of hematuria.

## Signs and Symptoms of Renal Trauma

When confronted with the possibility of renal trauma and its sequelae, it is important to assess the patient's general condition and, if necessary, administer appropriate emergency measures. Very few injured kidneys require immediate surgery.

Local or regional signs may show evidence of tissue trauma, discoloration, localizing hematoma or mass of gradually increasing size. Pain and limitation of movement on the affected side is usually present. Hematuria is usually present, but may be very deceiving. The mildest types of contusion or concussion may have severe hematuria, while the more severe injuries such as lacerations and rupture of renal vessels and ureter may have little or no hematuria.

The systemic reaction suggesting severe renal damage are signs and symptoms of shock.

If the vital signs have become stabilized and general conditions permit, intravenous pyelograms are essential as a guide to assessing the kidney damage and function. Cystoscopy and retrograde pyelograms are often desirable. The presence or absence of the contralateral kidney must be confirmed.

Much useful information can be obtained from comparison of regularly collected bladder urine specimens. However, it must be borne in mind this information must be related to the patient's other signs and symptoms, as by itself it may prove misleading. It is important to exclude the bladder as a source of bleeding.

## Treatment

Palliative treatment is often sufficient and yields good results in the majority of cases. The main point to be settled regarding any bleeding in any renal injury, penetrating or non penetrating, is whether surgical exploration is necessary and if so, when. The liberal use of blood and adequate anti-bacterial agents have lowered the mortality rate in cases treated by conservative management.

## Indications for Surgical Intervention

1. General deterioration of the patient, usually evidenced by signs and symptoms of bleeding, increasing size of the mass or dullness in the renal area.

2. Signs and symptoms suggesting extravasation of urine, with or without infection of the peri-renal space.

3. Anuria. The contralateral kidney may be reflexly inhibited by noxious stimuli originating from the injured kidney.

If primary renal damage is suspected, transabdominal exploration is not advisable. A lumbar approach is usually preferable. One of three procedures may be performed. 1. Drainage of the renal region with control of bleeding. 2. Partial nephrectomy and repair of the injured kidney. 3. Nephrectomy.

## Late Results

Secondary hemorrhage may occur and is most frequent in the second or third week after injury.

Infrequently these delayed hemorrhages may be very severe. Pyelonephritis, urinary fistula, hydronephrosis, ureteral stricture and stone formation may occur.

### Injury of the Ureter

The ureters throughout their course are remarkably well protected from external trauma, so that injury from external violence except from penetrating wounds is relatively rare. Conversely, increasing extensive pelvic surgery constitutes a vulnerable and not infrequent source of ureteral injury. It has been estimated that the occurrence of ureteral ligation as a complication of all operations on the female genital organs may be as much as 3%. The relative ratio of unilateral to bilateral injury is presumed to be 6 to 1.

Ureteral injuries, particularly unilateral lesions occurring during pelvic surgery, may neither be recognized nor suspected. Renal manifestations may remain quiescent for months or even years before hydronephrosis, pyonephrosis, or even complete atrophy of the kidney develops.

Immediate repair is often hindered by failure to recognize the accident at the time it happens. The most favorable time for repair is at the time of the mishap. The longer the situation exists unrecognized, the greater the technical difficulties of correcting the injury and the more serious the complications.

**Prevention**

A comprehensive understanding and familiarity with anatomical relationships is essential. Preoperative urograms are warranted in cases which are unusually difficult. The placing of indwelling ureteral catheters has many proponents.

**Treatment**

In cases of immediate recognition of ureteral ligation, deligation with passage of a ureteral catheter may suffice. Loss of structure from segmental trauma or resection requires accurate approximation, preferably over a catheter. Diversion of the urinary stream is highly desirable, either by T. tube, nephrostomy or pyelostomy.

When ureteral occlusion is recognized during the post operative period, efforts to restore and preserve renal function are paramount. If deligation cannot be accomplished, nephrostomy or ureterostomy should be carried out. If ureteral trauma with urinary extravasation has occurred, adequate surgical drainage is imperative. Intravenous urography and efforts at ureteral catheterization should be done as soon as feasible.

The techniques of the actual ureteral repair are beyond the scope of this paper.

### Injuries of the Bladder

Variations in age, size, shape, position and distensibility are important factors when considering bladder injuries. In children the bladder is much more abdominal than in the adult. A full bladder is more vulnerable to trauma than is an empty one.

**Types of Injury**

**1. Contusion.** This may be slight involving only the bladder mucosa, or may involve all muscle layers and serosa as well. Obstetrical delivery as well as fractures of the bony pelvis frequently cause some degree of contusion.

**2. Intraperitoneal rupture.** This denotes a complete break in the continuity of the bladder wall with communication into the peritoneal cavity. This injury usually follows blows to the lower abdomen when the bladder is full or distended.

**3. Extraperitoneal rupture.** This denotes a break in continuity of the bladder wall in an area which is not covered by peritoneum, thus permitting urine to escape into the perivesical tissues, but not into the peritoneal cavity. The usual site is on the anterolateral bladder wall, rather close to the bladder neck. Urinary extravasation occurs following fascial planes. This may cause necrosis, sloughing, and suppuration if not adequately drained. Extraperitoneal hemorrhage is often a factor with this type of bladder and pelvic injury.

**Signs and Symptoms**

Shock and hemorrhage with pallor are common. The pulse is usually rapid and the blood pressure is inclined to be low. Lower abdominal pain is usually present. An extreme desire to void, but inability to do so is usually classical. Some patients may be able to void small amounts of bloody urine. Hematuria is frequently present.

**Diagnosis**

Apart from an adequate history and physical examination, most diagnostic procedures involve the gentle aseptic passage of a soft rubber catheter. The best method of diagnosis is by a cystogram with opaque media. Cysto-urethrograms and intravenous pyelograms are often indicated and prove very useful in assessing and localizing the extent of the trauma. The time honored procedure of injecting a measured amount of water or saline and withdrawing a similar amount should be mentioned only to be dismissed as inaccurate and misleading.

**Treatment of Bladder Injuries**

As soon as shock is controlled, immediate steps for liberal bladder drainage must be undertaken. A mid-line incision is usually preferable. After assessing the local bladder damage, controlling bleeding and evacuation of blood clots, attention can be directed to repairing the bladder defect, establishing suprapubic cystotomy drainage and draining the perivesical space when indicated. Other supportive measures such as parenteral fluids, antibiotics and gastric suction may be necessary.

**Urethral Injuries**

These fall into two main categories:

A. Supraligamentary.

B. Infraligamentary.

A. Supraligamentary urethral injuries usually occur with extraperitoneal bladder injuries. Diagnosis usually is made by the presence of a blood

urethral discharge, difficult catheterization and extravasation of contrast media with urethrography.

Repair of the urethra is carried out after a catheter or sound is passed through the anterior urethra to the bladder or vice versa.

B. Infraligamentary urethral injuries. These are frequently associated with penile and scrotal wounds. It may be necessary to explore the perineum and restore urethral continuity. Cystotomy should be performed for urinary diversion. Adequate incision and drainage should be carried out for associated urinary or blood extravasation.

**Scrotal Injuries**

These may be bizarre and varied. Scrotal avulsion is perhaps the commonest industrial accident in this category. Any testes with an adequate blood supply should be saved at once by burying it in the upper thigh as a temporary measure after adequate debridement and local cleansing has been carried out. This should be accompanied by adequate incision and drainage, antibiotics and tetanus toxoid.

**Spinal Cord and Head Injuries**

The urinary tract may require attention soon after spinal cord or severe head injury. Voluntary micturition may be interfered with, and. if severe bladder or kidney damage is to be avoided, adequate urinary drainage must be established. Catheterization with a Foley 16 or 18 catheter usually is quite satisfactory. If this is not possible, a cystotomy drainage may be carried out as a temporary measure.

In summary, it is evident that injuries of the urinary tract may be many and varied. A plea is made for careful and accurate assessment, both of the urinary tract damage and of the patient as a whole. Corrective measures, either temporary or definitive should be undertaken at the appropriate time.

## Rehabilitation of the Traumatic Paraplegic

**M. H. L. Desmarais**
**L.R.C.P., M.R.C.S., D. Phys. Med.**

Experience gained in the treatment of paraplegics during World War II has shown, even in cases of complete transection of the cord, that most of them can be rehabilitated to the life of a useful citizen[14].

Of 1,000 paraplegics treated at Stoke Mandeville, England, 774 were discharged and above 69% of these found employment on the labour market[9]. Transfer of the patient to a Spinal Unit as soon as his general condition will permit gives him the best chances of a good functional recovery.

This presentation will deal with the management of the traumatic paraplegic in such a unit, stressing the importance of the care of the skin, and of the bladder and bowel. The prevention of complications, such as urinary calculi, contractures, osteoporosis and calcification of soft tissues will also be described. A brief outline of the physical therapy program and functional training of such patients will be given.

### Bed Sores

The cause of bed sores in paraplegics is primarily due to pressure exerted on the skin, causing ischaemia, multiple thrombosis of small vessels and necrosis[15].

Other factors such as malnutrition, pyogenic infections, anemia and hypoproteinemia predispose the patient to decubitus ulcers. The sacrum and greater trochanters in bed patients and the ischial tuberosity in wheelchair cases are the most vulnerable areas. Such ulcers can advance to extensive necrosis with exposure of the underlying muscles and bones. Osteomyelitis is not an uncommon complication.

Prevention is the best treatment of decubitus ulcers. This can be achieved by the early nursing of the patient on a Stryker frame or a Foster bed. This will allow frequent changes of position with the least discomfort to the patient. Any form of trauma to vulnerable areas must be avoided. Wet and soiled bed linen must be changed promptly. Pressure areas are treated two or three times daily with alcohol or Barriere cream rubs. Maintenance of good nutrition by assuring a high protein intake, correction of anemia with iron or blood transfusion, are also important factors to be considered. Orthopedic procedures such as early spinal fusion which will necessitate recumbency and immobilization for long periods are preferably avoided unless strictly necessary. Unduly prolonged recumbency is not recommended. In addition to predisposing to bed sores, it invites the development of stiff joints, calcification of soft tissues, urinary tract infections and the formation of bladder and kidney stones.

The patient and those responsible for his care must be made bed sore minded. It is unfortunate, however, that sores of varying sizes and gravity are still too frequently seen in paraplegics transferred late to paraplegic units. Their presence prolongs recumbency for unnecessarily long periods, and valuable time is lost in initiating the patient's rehabilitation program.

Anabolic agents have proved to be of value in restoring low serum proteins back to normal. Undue rise in BSP levels is a warning that the drug should be discontinued.

A mixture of 10,000 units of Bacitracin, 100,000 units of Streptokinase and 25,000 units of Strepto-

dornase in Lubafax* jelly to 60 grams has been found very useful to hasten the separation of large sloughs and to clean deep, dirty decubitus ulcers. As granulation tissue grows the application of eusol dressings or Cicatrin powder seems to keep the wound clean. In some cases Metiderm spray has been effective. Ultra violet light applied with a Kromayer lamp with suitable applicators direct to the ulcer in doses of four to five times a fourth degree erythema dose has not only a bactericidal effect but also stimulates the formation of healthy granulation tissue. It is, of course, necessary to protect the surrounding skin with a thick layer of vaseline. Topical oxygen therapy has been reported to give good results[8].

As the periphery of the ulcer heals massage of the scar tissue with olive oil helps to prevent adherent scars. Ultra sonics in dosages of 0.5 to 1.0 watts per square centimeter to the edge of an ulcer is reported to promote healing with healthy, non-adherent skin approaching normal thickness[3].

Plastic surgery on skin is reserved for large sores which have failed to respond to conservative treatment and for healed sores which have a tendency to recurrency.

### Bladder Function

Immediately after injury and during the stage of spinal shock there is urine retention, and a paralytic overflow-incontinence ensues[18]. The detrusor muscle is paralyzed and the internal sphincter tightly contracted and unresponsive to any stimuli. The external sphincter, on the other hand, is relaxed. This stage of bladder atonia may last for a few days, weeks, or months.

The appearance of spasticity indicates recovery from spinal shock and is usually associated with a change to an automatic reflex bladder. Such a bladder is considered good when it reflexly empties itself not more often than every two hours with a residual urine of less than 100 ml.[12].

A lesion directly affecting the sacral spinal segments destroys the centre of micturition and produces an autonomous bladder. Voiding then depends on the ineffective control of the nerve plexus situated in the bladder detrusor muscle. In such bladders emptying can be effected by manual compression or by straining, but high residual urine, hydroureters and hydronephrosis are frequent complications.

In partial transection of the cord above the sacral spinal segments some degree of sensation and motor power may be retained and voluntary micturition, though imperfect, may be achieved. All traumatic neurogenic bladders should be followed by regular intravenous pyelograms.

### Bladder Management

Bladder training should be aimed at voluntary control and emptying in partial cord lesions; involuntary periodic voiding at satisfactory intervals in cases with complete cord lesion[17].

Recovery of bladder function is not expected at an early stage. It is, therefore, necessary at first to use a self-retaining indwelling catheter of size 14F to 16F in adults and of size 12F to 14F in children. A short tip or a no-tip type of catheter is preferable to minimize trauma to the bladder wall. Initial and subsequent catheterizations should be carried out under strict aseptic conditions using the non-touch technique. During the stage of spinal shock it is preferable to establish continuous tidal drainage with "G" solution against moderate positive pressure. This will prevent the development of a small contracted bladder which often happens when the patient is kept too long on continuous drainage.

Bladder training starts when the reflex automatic stage has been reached. It is sometimes difficult to demonstrate this change, but repeated cystometrograms will be helpful in deciding when to change over from tidal to intermittent drainage. The fluid intake should be adequate at 2½ to 3 litres during the day. Fluid is allowed in small quantity to alleviate thirst at night. The patient is taught to keep his own fluid intake and output chart and instructed to adhere to a strict time schedule. The catheter is unclamped at first every two hours, and the time intervals subsequently increased and adjusted according to the urinary output and bladder capacity.

The bladder is irrigated twice daily with "G" solution leaving two or three ounces of fluid in the bladder at the end. The catheter bulb is deflated and reinflated once a week to discourage the formation of concretions and the catheter changed only if obstructed or not draining freely. On such a regime the catheter can be left in situ for two months or sometimes longer without requiring a change. When automaticity has been reached the catheter is removed and reflex emptying is tested. The use of Urecholine† 1 ml. intramuscularly and repeated in four hours is sometimes helpful in initiating micturition. The catheter is reinserted only if the bladder becomes distended and emptying has not been achieved. Failure at the first attempt is not a reason to submit the patient to a permanent catheter life. The above procedure is repeated at intervals and, if reflex micturation is not achieved and large residual urine persists, the cause of failure must be looked for. It may be that the patient is still in a state of spinal shock; that the lesion is a low one with an autonomous bladder; that the bladder has been allowed to become overdistended; or that some mechanical obstruction such as prostatism is present. Lack of co-operation by the patient, unskilled and untrained staff responsible for the patient's care, urosepsis, or the presence of bladder calculi may be other possible causes of failure.

*Lubafax .02% o. chloromercuviphenol. Burroughs Wellcome Co. Ltd., Canada.

†Urecholine: 1 cc = 5 mg% of Urethane of B-Methycholine Chloride M.S.D.

Bladder neck obstruction is corrected if present. Pudendal neurectomy, myotomies and intrathecal injection of alcohol all have their merits and cannot be discussed here in detail.

Once an automatic bladder has been well regulated the patient is instructed in all details of bladder care and is encouraged to take over this responsibility. Should he be a permanent catheter case he is taught to do his own irrigations and to deflate and inflate the bulb. Some patients will find the use of a condom connected to a urinal bag necessary, but for those with good control such a method should only be used when they go on long journeys or attend functions at which it is socially inconvenient to empty their bladder at their accustomed intervals.

H. L. Hey[10], in his address on the practical aspect of rehabilitation of paraplegics discusses in detail some of the social problems facing the paraplegic.

**Urinary Tract Complications**

Upper urinary tract infections and renal failure is the commonest cause of death of paraplegics. In World War I, deaths from urinary complications occurred early. In a large series of cases reported by Thompson[20], 47% of the patients died within the first eight weeks. Since, better knowledge of the management of the neurogenic bladder and the introduction of more potent antibiotics, has reduced mortality considerably. Only one death occurred within eighteen months of injury out of sixty-eight cases reported by Petroff[16].

The presence of an indwelling catheter for 72 hours or longer is sufficient to produce culturable bacteriuria[2]. Urine culture and sensitivity tests are routinely done on all patients. Acute urinary tract infection is treated by increasing fluid intake and straight bladder drainage against three or four inches of positive pressure. Appropriate antibiotics are prescribed.

Attempts at sterilizing the urine with long term courses of Sulphonamides or Mandelamine have proved useless in our hands. Upper urinary tract infection with pyelonephritis is a later complication and cannot be discussed here in detail. Suffice it to say that the early recognition and treatment of an obstructive lesion will reduce the incidence of this complication.

Urethritis in catheter patients is not uncommon, and the formation of a periurethral abscess and fistula are not rare complications. These may heal spontaneously on straight drainage and administration of antibiotics. Chronic fistulae are better treated surgically. Epididymitis is another complication of long term indwelling catheter care.

Recumbent and paralyzed patients excrete an unusually large amount of calcium. This hypercalciuria combined with stasis, urinary infection and the presence of urea splitting bacteria promote calculus formation.

An attempt should always be made at first to dissolve bladder calculi by continuous drainage with "G" solution through a two way catheter. More recently a 10% solution of "Renacidin" is reported to give better results[13]. Small stones which have failed to dissolve on the above regimen are best treated by cystoscopy and crushing; large stones may require removal suprapubically. Early mobilization seems to reduce osteoporosis and loss of calcium. This is one good reason for encouraging exercises, frequent changes of position, and the use of standing boards.

**Bowel Training**

Bowel training is usually carried out at the same time as bladder training. At first the patient may be incontinent of faeces, but with the appearance of a reflex bladder the bowels may also develop automaticity. The bowels are trained to open regularly on the clock. Alternate day bowel movements have been found suitable. A mild aperient such as Dulcolax[R1] tab. one or two at night followed the next morning at a fixed time by a Dulcolax[R2] suppository will help to regulate a good bowel movement. Some patients may require enemas and should preferably learn to administer their own. They should, of course, also learn to do their own manual disimpaction.

**Muscle Spasms and Contractures**

With recovery from spinal shock, tone returns to the skeletal muscles below the level of the lesion. The tension developed may be of such magnitude as to resist the examiner's maximum effort to manipulate the limb. The spasms may be tetanic or tonic in nature; extensor spasms may predominate or flexor and extensor spasms may alternate. In their most severe form they may render the patient completely incapacitated. It is in such cases that soft tissue contractures and deformities develop.

Pressure sores, distension of bladder and bowel, urinary infection or stones in the genito-urinary tract, misfitting braces or shoes all tend to aggravate muscle spasm.

Passive stretching of muscles, preferably with the patient immersed in warm water, tends to reduce spasticity. This is a curious fact, for stretch commonly induces a severe contraction in hypertonic muscles.

The use of muscle relaxant drugs has been found of little value in reducing spasticity. Chlorpromazine in doses of fifty mg. three or four times daily have been tried with equivocal results. Two ounces of whisky at bedtime sometimes has helped the patient to spend reasonably comfortable nights. Too deep sedation during the day may prevent the patient from effectively performing his training in terms of locomotion and activities of daily living.

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R 1. Dulcolax Tab: 5 mg. lb. acetoxyphenol — 2 — pyridylmethane. Geigy.

R 2. Dulcolax Sup: 10 mg. acetoxyphenol — 2 — pyridylmethane. Geigy.

In addition these drugs are often expensive and are not entirely safe.

Destructive, irreversible procedures are not to be recommended before six months from the time of the injury as spasticity may undergo spontaneous remissions. If spasticity persists and interferes with the patient's training and well-being, it may be necessary to abolish spasticity by surgical or other destructive procedures.

Anterior rhizotomy, neuromyotomy, and subarachnoid alcohol block all have their merits. It is, however, important to assess the patient and his needs carefully and apply the appropriate measure on the basis of this assessment. For example, a patient with a complete transection of the cord with disabling spasticity may be relieved by any of these procedures. But if a satisfactory automatic bladder has been established, then subarachnoid alcohol injection should not be done.

### Osteoporosis and Soft Tissue Calcification

It seems that osteoblasts are normally stimulated by muscular activity. Too prolonged immobilization in bed often results in osteoporosis[11].

Calcification of soft tissues around joints below the neurological lesion has been reported by many authors[1, 7, 19]. The best method of treatment appears to be its prevention by means of early mobilization[6].

Loss of protein must be adequately replaced by high protein diet, the use of anabolic agents, and the adequate intake of vitamin C, the lack of which has been shown to interfere with the formation of bone matrix in experimental animals[4].

### Rehabilitation Procedures

The total rehabilitation of paraplegics is best carried out in a paraplegic center where the staff, through training and experience, has reached a high degree of knowledge and skill.

Facilities for physical therapy which will carry the patient through the intense training program required are not usually available in acute hospitals. It is desirable to get the patient out of bed as early as possible for the reasons already mentioned above. Their training program should be so planned that they are busy for most part of the day. The methods used are aimed at getting the patient independent in all activities of daily living either as a wheelchair case or up on braces and crutches. It should be mentioned here that unless the cord lesion is quite low and the patient's determination unusually high, crutch walking will not earn him many dollars. A trial at crutch walking or standing with braces should not be denied to suitable cases if only to maintain a desirable metabolic balance. Crutch walking is often better used as an exercise. For work the wheelchair is by far better. Successful crutch walking in a lesion above the level of T.10 is very rare.

Strengthening arm exercises are started in bed with weight lifting. Once the patient has learned to turn over he should be moved to an ordinary bed at wheelchair level, the bed being fitted with a monkey bar and a rope ladder. If he has a tendency to postural hypotension, a standing board is very useful to get him accustomed to the erect position. At this stage he is taught to dress and undress himself and to get in and out of bed into his wheelchair. Wheelchair training is then progressed so that he can go through doors, tackle kerbs, and get in and out of a car unassisted. If braced, walking re-education with crutches will take a good part of his day's program. For the practical aspects of functional training of paralyzed patients from bed activities and self care to the more advanced techniques of ambulation on crutches, Edith Buchwald's book entitled "Physical Rehabilitation for Daily Living" should be consulted[5].

Training of the paraplegic requires the cooperation of many disciplines, working together as a team with the goal in view to restore maximum functional capacity and to reinstate the patient in Society as a useful member of the community.

### Bibliography


1. Abramson, A. S.: J. Bone and Jt. Surg., 30A: 982, 1948. "Bone Disturbances in Injuries to the Spinal Cord and Cauda Equina. Their Prevention by Ambulation."
2. Badal, D., Munroe, O. and Lamb, M. E.: New England J. Med., 230: 688, 1944. "The Clinical Significance of Bacteriuria in Patients with Spinal Cord Injury."
3. Boris, J. Paul: Archives of Physical Medicine and Rehabilitation, 41: 438-440, October, 1960.
4. Bourne, G.: Academic Press, New York, 1956. "The Biochemistry and Physiology of Bone."
5. Buchwald, Edith, M.A., A.P.T.A.: Physical Rehabilitation for Daily Living, McGraw Hill Book Co., Inc, New York, 1952.
6. Conway, H. and Griffith, B. H.: Am. J. Surg., 91: 946-975, June, 1956. "Plastic Surgery for Closure of Decubitis Ulcers in Patients with Paraplegia."
7. Dejerine, M., Callier, A., Dejerine, Y.: Revue Neurol., 26: 399, 1919. "Para-osteoarthropathies des Paraplegiques par Lesion Medulaire."
8. Gregg, George J., R.N., B.T.A.: Canadian Nurse, 56: 458, May, 1960. "Treatment of Deep-seated Ulcers by Exposure to Air and the Use of Oxygen."
9. Guttman, L.: Practitioner, 176: 157-178, February, 1956. "Management of Paraplegic Patients."
10. Hey, H. L.: J. Neurosurgery, 13: 184-189, March, 1956. "Practical Aspects in Rehabilitation of Paraplegics."
11. Howard, J. S., Parson, W. and Bingham, R. S., Bull, Johns Hopk. Hosp., 77: 291.
12. Hutch, J. A. and Burts, R. C.: J. Urol., 66: 218-228, 1951. "The Present Urologic Status of Wartime Paraplegics."
13. Mulveney, Wm. P.: The Journal of Urology, 84: 206-212, August, 1960. "The Clinical Use of Renacidin in Urinary Calcifications."
14. Munro, D.: Am. J. Surg., 75:4, 1948. "Rehabilitation of Veterans Paralysed as a Result of Injury to the Spinal Cord and Cauda Equina."
15. Pajel, J.: Student's Journal and Hospital Gazette, London, 1: 144, 1873.
16. Petroff, B. P.: Discussion, Urological Conference and Symposium on Paralysed Patients. Army Services, Forces, "Service Command, 1945."
17. Prather, G. C., Springfield, Illinois, Thomas, C. C.: "Urological Aspects of Spinal Injuries, 1949."
18. Ross, J. C.: Brit. J. Urol., 28: 24-36, March, 1956.
19. Soule, A. B., Jr.: J. Neurosurg., 2: 485, 1945. "Neurogenic Ossifying Fibromyopathies."
20. Thompson, Walker J.: Brit. J. Urol., 9: 217, 1937. "The Treatment of the Bladder in Spinal Injuries in War."

# The Multiple Injury Patient

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The car accident has made common the multiple injury patient. The management of these cases is complicated. Which of many serious injuries should be treated first? If one injury is discovered, what other injuries are often associated with trauma in this region? The purpose of this article is to answer these questions. The treatment of the specific injuries will be described elsewhere in this issue. The initial treatment of a multiple serious injury patient is based on these time honored principles:

1) Establish a clear airway.
2) Arrest Hemorrhage.
3) Treat Shock.

A naso-pharyngeal airway with or without a manual respirator bag is invaluable in the initial management of respiratory distress. Whenever there has been disruption of the upper respiratory tract or the chest wall with or without contusion of lung, early tracheotomy will greatly relieve acute respiratory distress. Early bronchoscopy is indicated to prove tracheo-bronchial patency. In short, everything must be done to avoid a crisis. Tracheotomy and bronchoscopy should be performed when first considered, not when secretions accumulate and cyanosis develops. Even under these circumstances it is probably best to establish a clear airway by endo-tracheal intubation first, as it is the most rapid method. Only in acute laryngeal oedema should a tracheotomy be done first in an emergency.

**Hemorrhage** whether external, internal or intracranial should be arrested early. When the hemorrhage is massive an operative procedure may be indicated before complete transfusion replacement can be given or shock controlled. Also extradural hemorrhage demands early surgery. Subdural hemorrhage is usually much less of an emergency. External hemorrhage must be controlled immediately by direct ligature of the bleeding vessels or by direct pressure, and never by tourniquet. When major peripheral arteries are injured early bypass or direct repair of the vessel is indicated to save the limb.

The treatment of shock requires rapid replacement of the circulating blood volume deficit. This should be done quickly. Circulatory overload can be avoided by venous pressure recording. In massive blood loss, blood substitutes must be given with care. They have obvious limitations as to the volume that can be used. Whole blood and packed cell transfusions should be used and given at the earliest possible moment. Even if this means transporting a seriously ill patient to the blood depot in order to save time. Early arrest of hemorrhage and rapid replacement of circulating blood volume deficit will give a dramatic response. However, when shock has been severe, prolonged and associated with hypoxia, oliguria or renal shutdown may occur. It is, therefore, imperative that all patients suffering shock should have an accurate hourly record of urine output. This should be charted as part of any vital signs record. The output should be at least 25 cc. per hour, preferably more. If oliguria persists despite adequate circulating blood volume replacement, then in certain selected cases, dibenzalene or some general vasodilator should be given to increase renal blood flow. Further blood transfusion will be necessary when these drugs are used. If this is done early, complete renal shut down may be avoided. However, if the latter occurs, and uremia develops, dialysis by means of an artificial kidney may become necessary to bring a patient through an extended period of severe oliguria or anuria associated with potassium retention.

Having rapidly attended to each of these three basic principles, the patient's injuries must be assessed. From this assessment, the priority of treatment is determined. Absolutely no time should be wasted. No patient should be denied full treatment, no matter how serious the injuries. Superb results were obtained in the Korean war by rapid transit of the critically injured to the care of fully equipped trauma units.

Severe injuries to the respiratory tract take priority over all other injuries. A clear airway, evacuation of the pleural cavities, and controlled respiration can be provided in short order. Endotracheal airway anaesthesia itself provides much of the control required and permits immediate treatment of the second priority injuries. First among these is internal hemorrhage. It must be arrested immediately. No delay is justified beyond establishing a clear airway.

Rupture of gastro-intestinal and genito-urinary viscera must be treated definitively within the first 24 hours to obtain the best results. Delay beyond this point is attended with established peritonitis, and frequent breakdown of surgical repair.

The head injury and comatose patient is obviously one that deserves special attention. However, the head injury itself rarely deserves prime priority in treatment. Once the patient's neurological state has been assessed the fact that he is comatose should never prevent or rule out the treatment of injuries of first and second priority, even if they require general anaesthesia. The urgent treatment of head injury cases is primarily the arrest of extradural hemorrhage and also the provision of an adequate airway. In fractures of the base of the skull naso-pharyngeal instrumentation and positive pressure breathing through the upper respiratory tract should be avoided because of the danger of contaminating intradural spaces through compounded fractures into the naso pharynx.

Fractures are third priority injuries as far as definitive therapy is concerned. They should receive second priority for proper immobilization and closure of compound wounds. This includes unstable fractures of the spine which receive top priority especially in the cervical region. Fractures, however, become of prime importance as soon as the initial critical phase is over. 90% of morbidity and persisting disability is directly related to fracture management. Wherever possible definitive therapy should be permitted to the individual fractures within the first ten days.

**The Patterns of Injury**

Often injuries occur in association one with another. When one of such injuries is recognized, it is important to rule out the injuries that frequently accompany it. The obvious injury may not endanger the patient's life, but it may give the clue to diagnosing the associated injury which may be a great deal more dangerous.

Trauma to the left upper quadrant and left lower chest classically may produce this triad of injury, (Fig. 1).

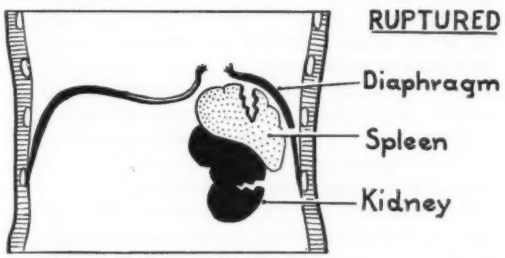


**Figure 1**

1) ruptured spleen
2) ruptured diaphragm
3) ruptured kidney

On the Right side the triad includes liver laceration. The size of the liver results in a plugging of the rupture of the diaphragm so that it may be of less serious significance.

**Fractures of the pelvis** in close relation to the urinary bladder and urethra may cause rupture of either organ. Catheterization, cystogram, panendoscopy and cystoscopy should be performed where suspicion is aroused (Fig. 2).

**Blunt trauma to the abdomen** may result in rupture of bowel at the junction of its fixed and mobile points such as duodenojejeunal and ileocaecal junctions by means of the jarring effect of injury. The transverse colon, third part of duodenum pancreas and any portion of small bowel may be ruptured by being crushed against the vertebral prominence. All demand early surgical care (Fig. 3).

**The crushed chest** may be associated with myocardial contusion, rupture of diaphragm, early or

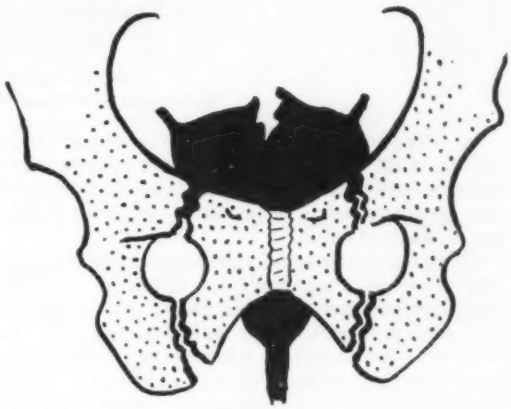

**Figure 2**

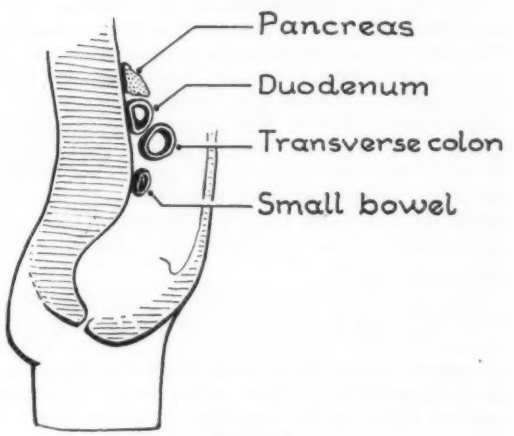


**Figure 3**

delayed rupture or aneurysm of the aorta at the junction of arch and descending aorta i.e., its mobile and fixed points.

**A facial smash** may be associated with cervical cord and vertebral damage. A fall from a height causing bilateral fractured os calcis may be associated with lumbar vertebral fractures.

**Long bone fractures** may be associated with and cause nerve and arterial injury.

**Fractures of the upper tibia** may produce an anterior compartment syndrome. In multiple injuries acute gastric dilatation is usually present. This produces considerable shock in itself and therefore these cases should have early naso-gastric intubation.

In conclusion it must be stressed that all multiple injury patients are complicated problems. One must not be satisfied to attribute all symptoms and findings to obvious injuries. It is vitally important for the proper priority of treatment to be followed in each case.

# Fat Embolism — A Study of Ten Cases

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A complication frequently overlooked after trauma is fat embolism. The patient who becomes comatose after having been conscious on admission may be diagnosed as "concussion" when fat embolism is the real cause.

Sevitt has classified fat embolisms into pulmonary and systemic. Pulmonary fat embolism is much more common than systemic. Sevitt claims that the clinical significance of systemic fat embolism has been over-estimated. In 100 necropsy studies, who died following trauma, 89 had pulmonary embolism, while only 24 of these demonstrated systemic embolisms.

Patients who are victims of fat embolism and survive may never be diagnosed as such, unless a characteristic petechial rash is present. This rash is evidence of systemic embolism, while patients with only pulmonary embolism exhibit no such rash. The petechial rash is first seen on the shoulders, axilla, neck, conjunctiva and fundus; later it may be seen over the entire trunk and limbs. Those surviving an episode of fat embolism may recover completely, or show some personality changes, or occasionally severe cerebral deterioration.

**Source of Emboli**

The source of fat embolism is still uncertain. What is certain is that there must have been some trauma to bone or soft tissues. The extent of the trauma may vary considerably before fat embolism is initiated. Harris cites a patient who developed clinical signs of fat embolism two days after a spinal fusion (with bone grafts taken from the tibia).

In Sevitt's series of 100 traumatic deaths, of the 24 who had systemic fat embolism 7% had mild injuries, while 45% had severe bone injuries.

Lehman and Moore (1927) showed that the degree of fat embolism is not proportional to the severity of bone injury. Experimentally the intravenous injection of fat can produce respiratory distress (due to pulmonary fat embolism), venous congestion and even death. However, the lungs then show a greater degree of embolism than has ever before been seen in man.

The classical view as to the source of fat emboli was, that following trauma the fat cells in the marrow broke up, liberating fat into the marrow spaces. The torn arteries in the bone liberated an increased amount of blood into the marrow spaces, increasing the pressure and forcing the veins to carry increased amount of fat into the system. Now we know that no fractures need be present to initiate release of fat emboli.

Virchow (1862) attempted to demonstrate the pathology of fat embolism by the injection of different oils into animals. Harris (1939) showed that the administration of a comparatively small amount of fat in a single dose is rapidly fatal. If the fat was administered in smaller repeated doses over a period of time a comparatively large amount of fat can be given.

Robb Smith has noted that the main characteristic of fat embolism is the presence of fat in the form of sufficiently large globules which can obstruct arteriole and capillaries. The deleterious effect of the hemorrhage and necrosis would occur following hydrolysis of the fatty acid from neutral fat by an excessive amount of lipase acting intramuscularly. The period of free clinical signs would be related to this period of lapse between the evident emboli of neutral fat and its hydrolysis.

**Incidence**

The incidence of deaths due to fat embolism varies with different authors. These cannot be accurately assessed unless special staining methods and efforts are made to discover the fat. Vance in his series attributed 20% of traumatic deaths due to pulmonary embolism.

Robb Smith in 1941 found 41 out of 125 traumatic deaths (23%) had gross fat emboli at necropsy.

Sevitt in his 100 cases of 100 traumatic deaths at Birmingham noted 89% had pulmonary embolism and 24% had systemic embolism.

To accurately detect the systemic fat in autopsy studies should be made of frozen sections of brain stained for lipid. Ideally this should be done for the kidney as well, in suspected cases.

**Clinical Features**

The onset of clinical features in our cases have all been within the first 36 hours after the traumatic event (see Table 1). Classically, it was thought that the first clinical features would not be evident until 48-72 hours following trauma. Sevitt reports that 23% showed clinical features within 12 hours after the injury, 60% within 24 hours, 80% within 36 hours and 90% by 48 hours.

The onset of clinical features usually is preceded by three outstanding events before fat embolism can occur: (1) trauma, (2) shock, (3) a latent period before signs are evident.

**Illustrative Cases**

**Case 4**

A 34 year old male was admitted in shock after having been thrown from a moving truck. He had fractures of right and left pubic rami and sacrum. With restoration of blood volume the patient was treated conservatively and appeared to be responding well. The patient suddenly became confused and irrational 36 hours after admission. His speech became slurred, pulse rapid and respirations shallow. Petechiae were noted on the chest, shoulder, forearms and conjunctiva. Urine fat was 0.07 gm%.

TABLE I

KNOWN CASES OF FAT EMBOLISM — ST. BONIFACE GENERAL HOSPITAL, 1957-1960

| Case | Age | Sex | Cause of Injury | Type of Injuries | Onset of Symptoms | Duration of Symptoms | Time of Death | Site of Petechiae | Site of Emboli In Autopsy |
|---|---|---|---|---|---|---|---|---|---|
| 1. | 7 | M | Car Accident | Bilateral femoral fractures | 30 hours | 3 days | | Shoulder | |
| 2. | 45 | M | Fell 25 feet | Rib Scapula, left ilium & ischium fractures | Immediate | 6 hours | 6 hours | None | Lung |
| 3. | 64 | F | Fell on street | Hip fracture | 24 hours after surgery | 9 days | 9 days | None | Lung |
| 4. | 34 | M | Fell from moving truck | Multiple pelvic fractures | 36 hours | 4 days | 4 days | Generalized | Cerebrum, Lung Glomeruli |
| 5. | 22 | M | Car accident | Comminuted fracture both femora | 24 hours | 23 days | 23 days | Axilla | Cerebrum, Lungs Glomeruli |
| 6. | 86 | F | Fell off chair | Hip fracture | 24 hours | 2 days | 2 days | None | Cerebrum, Lungs Glomeruli |
| 7. | 16 | M | Car accident | Tibia & fibula fractures | 24 hours | 30 days | | Axilla Conjunctiva | |
| 8. | 81 | M | Fell off step | Hip fracture | On admission | 3 days | 3 days | None seen | Cerebrum, Lungs Glomeruli |
| 9. | 32 | M | Car accident | Tibia, Femur fractures | 36 hours | 5 days | | Generalized | |
| 10. | 65 | M | Car accident | Comminuted femoral fractures | 20 hours | 1 day | | Axilla | |

The patient gradually deteriorated and died on the third day following the accident.

The post mortem studies revealed petechiae in brain stem and focal cerebral cortical necrosis. Petechiae were seen in the pericardium. The lungs were congested with petechiae noted in the pleura. Fat emboli were noted throughout the lung. In the kidney, fat globules were seen in the glomeruli.

**Case 9**

A 32 year old male was a passenger in a car which hit a telephone pole. He was in shock, unconscious and had a compound segmental fracture of his right femur and a fracture of his right tibia. He received a blood transfusion and his right leg was splinted. The blood pressure returned to normal limits, and his condition was satisfactory. Thirty-six hours after the accident, while being shaved by his barber, the patient suddenly fell asleep and was extremely difficult to arouse. His pulse became rapid, and he appeared dyspneic with rapid, shallow respirations. His temperature and blood pressure rose slightly.

On examination petechiae were seen on the shoulders, axilla, neck and conjunctiva; a few hours later they were seen also on the trunk, upper and lower limbs. Subsequently he was treated as conservatively as possible with a Steinmann pin behind the right tibial tuberosity and by balanced tractions. He remained confused and stuporous off and on for five days and then recovered completely. He had diminished reflexes and was incontinent during the episode. A chest x-ray showed no clear evidence of a pulmonary lesion, although fat was present in the sputum and urine.

The two examples serve to point out some of the clinical features present.

The onset, as noted, is usually sudden with the first signs being stupor, delerium or disorientation. Coma is more frequent in fatal cases. Respirations are labored, frequently rapid and shallow. Cyanosis is obvious, and occasionally auscultation reveals bronchial changes. The pulse in every case is rapid and the blood pressure may rise or fall. Neurological disturbances noted in our series were diminished reflexes, both deep and superficial and incontinence. Case No. 7, a 16 year old male, had nocturia and was somewhat disorientated with loss of memory for recent events up to the time of his discharge. This was noted in two of the four cases seen.

In severe cases renal shut-down may occur. In Case No. 5, where the patient survived 23 days after the first symptoms, the Blood Urea Nitrogen rose slowly to 186 mgm%. Autopsy studies demonstrated fat emboli in the glomeruli with considerable renal destruction.

Petechiae are still the most diagnostic characteristics. Petechiae may appear in one or more "showers." They are first evident in the axilla, shoulders and conjunctiva and later may be noted on the trunk and limbs. They may be missed if not looked for. If found in the conjunctiva, they are always seen in the fundus as well.

Permanent personality changes are frequently reported. In our Case No. 1, of a seven year old boy, the parents feel that since the accident (2½ years ago) their son has not suffered in his school work, but has a "terrible temper."

In the 16 year old boy (Case No. 7) the boy was depressed and amnesic after the incident. His case is only a few months old and may improve.

**Diagnostic Aids**

Accurate laboratory diagnostic methods have not yet been established. Fat in the sputum is diagnostic of pulmonary embolism. Urinary fat is frequently not found because of failure to empty

the bladder completely. The fat floats at the surface. The group at Birmingham in suspected cases successfully did needle biopsy of the kidney and skin petechiae.

The presence of petechiae associated with clinical signs following trauma is still the most diagnostic feature.

**Treatment**

So far no effective treatment is known. Attempts have been made to prevent the spread of fat emboli from the site of trauma by tourniquet or ligation. These have proved impractical. Newman cites a few cases where he successfully ligated the veins at the site of fracture.

To prevent any more showers of fat emboli, once clinical signs are present, further manipulation of the fracture should be avoided or kept to a minimum. Secondly, no surgical procedure which involves dislodging pulmonary emboli should be attempted while clinical signs of fat embolism are evident. Thirdly, the patient should be transported with the greatest of care after any traumatic case. The experience in the Korean War demonstrated that patients transported over rough roads and with inadequate immobilization of fractures, had a much greater incidence of fat embolism than those handled with care.

**Summary**

Ten cases were studied at St. Boniface General Hospital for three years 1957-60, of whom six died and four survived. A high index of suspicion is essential to search for characteristic petechiae in patients showing any mental changes following trauma.

Fat embolism has a definite sequence of events:

1. History of trauma
2. Shock
3. Latent period in which patient appears well
4. First clinical signs
   a) Mental changes of delerium, confusion or coma
   b) Rapid pulse
   c) Shallow rapid breathing
5. Characteristic petechiae seen on shoulder, axilla and conjunctiva.

**Bibliography**

Harris, R. 1939: Fat Embolism. Annals of Surgery, 110, p. 1095.

Newman, P. 1948: Clinical Diagnosis of Fat Embolism. J.B.J.S., Vol. 30B, p. 290.

Robb-Smith, A. H. T. 1941: Pulmonary Fat Embolism. Lancet, 1941, Vol. 1, pp. 135-141.

Sevitt, Simon, 1960: The Significance and Classification of Fat Embolism. Lancet, Oct. 15, 1960, p. 825.

Scully, R. G. 1956: Fat Embolism in Korean Battle Casualties. Amer. J. Path., 32, p. 379.

Silverstein, A. 1957: Significance of Cerebral Fat Embolism. Neurology, 1957, Vol. 2, pp. 292-309.

## The Transportation of the Injured Extremity

**David McQueen, M.B., B.S.(Lond.), M.R.C.S.(Eng.)**

Long distance travel is a feature of Canadian life. The evolution of air transport and the modern automobile has eliminated a large element of the time factor in movement between two points. This in its turn has made its contribution to the care of major injuries in main treatment centres across Canada.

Distance is only a relative factor varying from a few feet to a thousand or more miles. When a patient is moved from one point to another it constitutes transportation.

The early care of the injured extremity relevant to transportation must therefore be based on a careful analysis of where such moves are likely to take place, and with the constant reminder that the injured extremity may be of the least concern to the survival of the patient in terms of existing injury to other more vital bodily parts.

The application of the principles of transportation begin when the patient is first encountered. This may be in a mine shaft, in an automobile, on a farm, or in an industrial power plant. Irrespective of the location it is most likely that the injured individual will first be moved by a person with only a summary knowledge of first aid.

It is often said that a doctor is of little value at the scene of an accident and that a well trained ambulance attendant is all that is required. This philosophy is open to question. Lack of facility at the scene of an accident is a poor excuse for non-attendance if this is reasonably possible. At this crucial point in the handling of severe trauma it is a trained eye and a trained hand rather than facility which will serve the patient best of all. For the purposes of this discussion it will be assumed that a qualified doctor is present in the first instance.

Each one of the following points is directly related to the initial transportation of an injured individual which it will be assumed is to a local hospital in the first instance.

1. A reassuring, quiet and efficient presence even although the situation may be baffling.

2. Control of frank hemorrhage.

3. A quick systematic examination of the entire patient from head and eyes to the tips of the extremities, with cutting of the clothes when doubt exists.

4. Intravenous administration of analgesics where no contraindication exists in regard to other injuries, e.g. head injury.

5. Correction of gross deformity of limbs or joints immediately even in a situation where analgesics are contraindicated, followed by temporary splinting and dressing of wounds where necessary.

6. Intravenous measures to combat shock if these are available at the scene of the accident.

The first move is then made with deliberate care. Ambulance drivers should be cautioned to drive with reasonable care, and to avoid high speeds which might necessitate sudden braking action, as the latter can have disastrous effects on the blood pressure from the influence of gravitational forces derived from sudden changes in speed and direction and applied to a body not prepared to meet them.

### Local Hospital Management

Further transportation will be either major or minor. The latter constitutes moving a patient from a stretcher into a bed or onto an x-ray table or even an operating table. If further major transportation is to be made the patient should not be moved from the stretcher. Definitive preparation for the journey should be carried out as they lie.

A dogmatic ritual cannot be laid down with regard to definitive handling of the injured extremity at this point. So much depends on the nature of co-existing injury to other parts. But three points are of prime importance:

1. Compound injuries must be examined.

2. Gross angulation must be corrected should there not have been a doctor in attendance at the scene of the accident.

3. Splinting, whatever its nature, must give:

(A) Satisfactory immobilization of the part in reasonable alignment,

(B) Adequate comfort to last perhaps for several days to allow injuries to more vital structures to be dealt with first in order of priority.

### Preparation of the Compound Injury

**1. For Immediate Transportation**

The site should be covered with a sterile or clean cloth; the area padded well with absorbent cotton, and the extremity immobilized with a long posterior plaster of paris slab held in position by a gauze bandage over its entire length. One million units of crystalline Penicillin G together with antitetanus serum (1,500 units) and antigas gangrene serum (25,000 units) should be given.

**2. For Delayed Transportation**

If the delay in transportation is to be longer than six hours then the wound must be debrided and a careful toilet of the bone ends carried out with primary closure where possible. If the latter is not possible the wound may be packed with Vaseline gauze.

Further management is then as in para. 1 above. The crystalline Penicillin should be given at the rate of 500,000 units every eight hours.

**3. Correction of Gross Angulation**

A perfect reduction is not necessary at this stage in the management of the case, but approximate alignment is necessary to prevent damage to blood vessels and nerves through kinking.

Early correction of gross deformity greatly assists in the correction of shock, and eliminates many painful stimuli.

**4. Splinting the Injured Extremity:**

**(a) Plaster of Paris:** There is no place for unpadded casts in the transportation of the injured extremity. Padding should be loose and abundant, and fixed by the moulding of only sufficient plaster to maintain the position of the extremity and protect it.

If a circular plaster is used, it should then be split from end to end. This can be quickly and safely carried out with a plaster saw or knife in the presence of the adequate padding beneath.

The proximal and distal ends of the cast should be rounded off with the finger before the cast has set to avoid constant abrasion of normal skin by jagged, rough plaster edges.

Often a well-padded limb may be immobilized by the application of a posterior splint held in place by a moistened gauze bandage over its entire length.

**(b) The Thomas's Splint:** The application of this splint for the transportation of the fractured femur is often nullified by the absence of an adequate windlass traction. A Thomas's splint with a good windlass traction can be more protective for long journeys if it is converted into a Tobruk splint. This is easily done by encasing the splint (with the limb in traction) in a light cast.

If a Thomas's splint is not available and facility and other injuries permit, a single hip spica should be applied. Should this be impossible or contraindicated, the injured leg should be bound securely to the opposite limb. A long plaster splint placed on the lateral aspect of the injured leg from the trochanter to the ankle and incorporated in the bandage will give added stability to this form of splintage.

### Summary

1. Whenever possible gross injury should be assessed and handled by a qualified person at the scene of the accident.

2. An extremity in transportation should be:

(a) Securely and comfortably immobilized with abundant padding in reasonable alignment, so that no further treatment is required (provided the injury is not compounded) until other more vital injuries have been investigated and treated.

(b) Compound injuries must be prepared for transportation taking the probable time factor into account.

(c) A brief note of the findings and drugs administered should accompany the patient.

(d) A tourniquet should not be present on a limb in transportation.

# Suicidal Trauma

George C. Sisler, M.D.

It is evident that self-inflicted trauma as a consequence of attempted suicide requires the same medical and surgical therapy as that occurring due to other causes. It should be unnecessary to emphasize the physician's responsibility to carry out treatment with the same diligence and persistence as in the case of accidental injuries. To ever decide that the desperate patient would be better off not to recover amounts to passing a judgment that does not rest with the doctor. Many patients whose attempt on their life while in the depths of depression barely escapes succeeding recover completely from both the self-inflicted injury and the most severe causative mental illness.

Of 68 consecutive patients admitted to the public wards of the Winnipeg General Hospital over a one year period having attempted suicide, all but one survived. None of the remainder died from any cause within one year of the attempt, and of the 49 regarding whom additional follow-up information was available, only 6 were readmitted in this period because of another attempt on their life.

The term "suicide attempt" is more difficult to define than at first appears. There is a self destructive motive of varying etiologic importance in some automobile "accidents," falls from heights, gunshot wounds, or "accidental" poisonings, particularly in those that appear to be due to gross carelessness. Some patients with such injuries, though aware of self-destructive intent, conceal this motive. Thus in those injured patients where this is a possibility it is essential when physical recovery permits, to take the time to discuss the circumstances of the accident and the patient's motives and mood, and thus allow him to make known these factors, should they be present.

The more usual suicidal trauma of a gunshot wound occurring during a depressed state, knife cuts to the throat or wrist, or the swallowing of a sedative or corrosive poison are more readily diagnosed as such. All such patients should be admitted to hospital. Many require this for treatment of their injury, but even those who do not should be admitted for an evaluation of the nature and severity of the emotional disorder and of the circumstances leading to the attempt. It is exceedingly difficult to accurately evaluate the emotional state of the patient rapidly in the office or the hospital casualty room. Further, the patient requires not only the close psychiatric study possible only in hospital but also the protection and security of removing him temporarily from the family or other interpersonal conflict which has often precipitated the attempt on his life. If this is available, psychiatric consultation is advisable.

The motives that lead to suicide attempt may be identified as being "self punishing" or "appeal" in nature.

The "self punishing motive" may consist of a desire for death or a desire for mutilation, pain or suffering. These masochistic motives may result in trauma varying in severity from skin excoriation to critical injury to one or several areas of the body.

The "appeal" motive is strong in many suicide attempts. It is rarely a simple selfish desire for sympathy and attention. More often it is the outcome of a desperate need to draw the attention of others to the individual's inability to cope with his difficulties and to his need for help. The problem for which the patient seeks a solution is usually a conflict with someone emotionally close to him—most often a relative. Through the suicidal act it is often hoped there will be caused a change in other's attitude toward the patient. He desires to avoid their anger by taking on the role of a suffering and wronged person. Mingled with this is often a desire to punish the hostile relative with the knowledge that he has been a cause of the suicidal act.

These factors must be evaluated by an interview or a series of interviews with the patient and often also with the family, a psychiatric diagnosis reached, and appropriate treatment plans formulated. Though especially common in psychotic depressions, suicide attempt may be a symptom of any type of psychiatric disorder from a severe psychosis of organic or psychogenic nature to a reactive depression due to gross stress or personality inadequacy.

If the self-inflicted trauma has occurred in a deeply depressed patient, the attempt itself may cause a lifting of the depression. It may be that the punishment has relieved his guilt. However, this may not be a sustained improvement, and sometimes the patient remains depressed.

Medical and surgical management may be complicated by a continuation of the psychiatric illness which led to the self injury. Most patients who have attempted suicide are normally cooperative in treatment. Some, however, are not, either because of continuing delusional ideas in a schizophrenic illness, hallucinations and confusion in an organic delirium, or the despondency of persistent depression. Sometimes there is a continued suicidal preoccupation which requires close observation and protection, careful attention to maintaining nutrition and the protection of wounds from interference. Apart from gross resistiveness and refusal to accept treatment, the self destructive trend may continue in more subtle unco-operativeness, and agreement to undertake only some of the treatments recommended. It is essential that there be continuing collaboration between the psychiatrist and other doctors who are treating the patient, since concomitant treatment with psychotherapy,

drugs, electroshock or other measures may be necessary as the surgical and medical care proceeds. This is particularly so when there is some continuing surgical treatment necessary, for example, repeated dilatations of an oesophageal stricture from chemical burns. The patient must not be left to his own resources to determine whether or not he co-operates. In rare cases, insistence on admission to a closed psychiatric hospital may be necessary to ensure adequate therapy.

The ultimate outcome of the illness, and indeed, the question as to whether or not a further suicide attempt is made in the future, depends often on how completely the patient recovers from both the physical injury and the emotional disorder, since these determine how able he is to deal with whatever continuing environmental stress he must face. Every effort must be made by those responsible for his treatment to ensure as complete rehabilitation as possible.

## Ocular Trauma

Robert M. Ramsay, M.D., M.Sc. (Ophth.), D.A.B.

To avoid repetition, may I state that in all appropriate circumstances, measures for relief of pain and to combat infection are advised.

**Conjunctiva**

The conjunctiva is subject to foreign bodies, lacerations and chemical injuries. Removal of a simple foreign body does not offer a problem, but it is worthwhile to stress the necessity of doubly everting the upper lid in order to search thoroughly the upper cul de sac. I well remember the case of the youthful farmer with a persistent corneal ulcer which cleared up in short order when a chaff of wheat was removed from the superior cul de sac.

Chemical burns require immediate copious lavage with water and removal of particles of lime or other offending agent by moist applicator from both cul de sacs and other recesses of the conjunctiva sac. Arsenical and heavy metallic agents may be neutralized by 5% dimercaprol. When a symblepharon appears in the later stages, plastic repair is advised after the inflammatory process has subsided completely.

Simple lacerations of the conjunctiva heal well and should be sutured when necessary bearing in mind that ocular motion delays healing by separating the wound margins.

In all cases, it is well to examine the eye carefully for complications such as iritis, hyphema, scleral laceration and derangements inside the eye. Particular attention should be paid to the ocular muscles to note whether or not they have been severed when the conjunctival laceration is in the neighbourhood of a muscle insertion.

**Cornea**

The cornea, because of its transparency, is of prime importance to vision and because of its location, it is subject to foreign body injuries, chemical burns and lacerations. The simple foreign body that may be wiped off the cornea with a wet applicator under the influence of ½% pontocaine drops offers very little problem, but when the foreign body is embedded, particularly when it is in the pupillary zone, great care must be taken to remove this foreign body without damaging the surrounding corneal tissue. With that in mind, it is not wasteful of time to re-emphasize the necessity of good light, good magnification and a finely pointed instrument in the removal of these foreign bodies. Where oxidation or a rust ring remains, it is well to curette this away as otherwise it prolongs ocular inflammation. If there should be signs of ciliary irritation as evidenced by a flush around the limbus, it is wise to instill a few drops of 5% homatropine solution in older individuals and perhaps 1% atropine ointment in younger individuals. It is necessary to pad the eye for as long as the corneal lesion takes a stain. It is advisable to instill an emolient salve for a few additional days so that corneal repair has time to become firm. Some cases have a multitude of foreign bodies embedded in all levels of the cornea. It is obvious that removal of many fine foreign bodies from the cornea in all its various layers would be so traumatic that the purpose of preserving vision might well be defeated. In these cases, many foreign bodies gradually extrude themselves and are evacuated spontaneously, and of course it is reasonable to remove some of the more superficial foreign bodies. Glass and rock are not very irritating and may be left safely in situ if difficult to remove. At other times, the foreign bodies are so numerous and the reaction around them so intense, that the cornea becomes completely or almost completely scarred with resulting grave loss of vision. Such cases respond well to perforating corneal graft measures, and in one recent case it was possible to obtain an increase of vision from hand movements to 20/40 by this method. A graft should not be performed until the eye is quite free of inflammation.

Abrasions of the cornea are perhaps just as frequent as foreign bodies and when simple, will heal quickly with measures such as antiseptic or antibiotic ointment, the use of homatropine or atropine and occlusion of the eye until all corneal staining is absent. It is moot to mention several circumstances wherein the abrasion is deeper and

where some loss of corneal substance occurs. This is the sort of injury that occurs in a scratch from an infant's finger-nail or from a partner's finger-nail or sometimes as a result of hunting whereby a frozen twig or a stiff reed gouges a small bit out of the cornea. It is particularly important to note that these injuries are extremely painful and their period of recovery is prolonged because they are often in the centre of the cornea and it takes time for the blood vessels to develop and replace the tissue lost. In these cases I have found it necessary to employ morphine or demerol for the relief of pain. Of course local antibiotic ointment and the use of atropine in the absence of glaucoma is also necessary in addition to occulsion.

Chemical burns are particularly dangerous to the cornea and all the treatment described under the preceding heading of "Conjunctiva" should be carried out in the case of the cornea. When vascularization occurs in the later healing stages, beta radiation may well be employed to lessen the formation of blood vessels. In case of severe opacification of the cornea, corneal grafting may be required, and at present it is recommended that a lamellar graft be used first and followed by a perforating central corneal graft.

Lacerations of the cornea, are also quite common and often due to breakage of a person's own glasses. A recent case seen in consultation was that of a 14 year old boy who had been struck in the face by a hockey stick which broke his glasses and severed the cornea completely from sclera to sclera. With most of the contents of eyeball having been lost prior to examination there was little to advise except evisceration or enucleation of the eyeball. This type of injury makes it clear that a safety glass should be used in all spectacles. There are several types of spectacle lenses used for safety purposes and amongst these are the laminated, the surface hardened, and plastic lenses. While there are some slight disadvantages to the use of all these types of lenses, the protective features are of such value that I think they should be used on all people who are active. In this day of frequent automobile accidents it is even more desirable that one should have the protection of safety glass in their spectacles as well as in the windshield of the car.

**Sclera**

The sclera is represented by the tough white membrane seen underneath the conjunctiva and at times especially in myopia this may be considerably thinner than usual, and also this is the case in scleromalacia and in certain collagenous connective tissue disorders. The sclera is subject to rupture by a blunt force directed against the eye and this usually takes place at the thinner parts which may be 2 or 3 mm. from the limbus or at the equator and usually on the side opposite to that of the injury. Of course at other times it is involved directly by means of a laceration of the overlying conjunctiva, and in severe cases where much vitreous is lost it may be well to continue tne process and evacuate the contents of the eyeball and put in a sterile prosthesis in preparation for an artificial eye. In lacerations of the sclera the likelihood of damage to the vitreous, choroid, retina, lens, and ciliary body is marked and very often these eyes are lost. Where there does not seem to be any undue damage to the underlying structures and where there does seem a reasonable chance for recovery the sclera should be sutured and if the laceration is posterior to the ciliary body a ring of perforating diathermy should be placed around the wound to lessen the chance of retinal separation.

**Eyeball**

In this section we are particularly concerned with contusion of the eyeball as a unit. A common result of contusion of the eyeball is hyphema which is the name given to blood in the anterior chamber. This forms a fluid level of variable size. The bleeding occurs usually from a tear in the iris either at the pupillary margin or at the iridociliary junction. Often times when the hyphema is slight, it will clear in a few days with ocular and general rest and it may be noted here that these cases should be treated seriously with binocular bandaging because of the frequent recurrence of bleeding with complications. It is probably best neither to instill atropine nor eserine, as movement of the iris may increase the hemorrhage. Sometimes a recurrent hemorrhage takes place in spite of the greatest of care and this usually occurs on the fifth or sixth day. If the hemorrhage is modest in amount only a disappointing delay in healing results, but if it is large, a secondary glaucoma may ensue. If the pressure of the eye remains over 35 mm. of mercury for 24 hours after hyphema has occurred, it has been advocated by Marshall that it be removed by means of paracentesis of the cornea. Sometimes the blood is formed into clots, and these will have to be irrigated out of the anterior chamber. This often results in dramatic healing, but in the worst type of case the bleeding recurs after each paracentesis or irrigation of the anterior chamber and glaucoma remains causing blood staining of the cornea and loss of vision.

Contusion of the eyeball may also result in oedema of the macula and the surrounding area which is known as Berlin's oedema. When severe, this may result in a hole at the macula as evidenced by a recent case I saw when a tire exploded during a filling of air and struck the man along the lateral margin of the orbit. In such cases, there is little to do except wait and to keep the eye at rest. A certain amount of disability may be expected, and in the case I mentioned, vision has been reduced to less than 20/200. Choroidal hemorrhages and ruptures are also a common accompaniment of severe ocular contusion, and these result in retinal degeneration and loss of visual function to a

greater or lesser degree. A traumatic cataract may well result from contusion, and the degree of opacification depends upon the severity of the contusion. It may be left alone or removed depending upon the state of the vision of the fellow eye and the presence or absence of secondary glaucoma. In any case, with a traumatic cataract, it is wise to dilate the pupil immediately to prevent a posterior iris synechia and wait until the eye settles down. The case should be followed carefully, searching for glaucoma, and if this occurs, the carbonic acid anhydrase inhibitor drugs can well be tried preliminary to surgery. Surgical measures to remove the traumatic cataract vary from discission to intracapsular extraction and usually a linear extraction is the method of choice. At times, a cataract is not formed immediately but the lens is subluxated, or dislocated. If it is the former and the lens seem to be held fairly well in position, the case may be observed for some time until the eye settles down and to note whether or not complications such as secondary glaucoma are going to ensue. If such is the case, of course, the lens must be removed. The same might well be said of a dislocated lens, except that the possibilities of trouble are enhanced. If the lens has been dislocated into the vitreous, a formidable surgical procedure is required, and it is wise to remember Verhoeff's manoeuver wherein directing a gentle stream of saline against the vitreous face may cause the lens to rise to the surface at which time it can be removed easily without disrupting the entire vitreous structure.

Another consequence of severe contusion of the eyeball is that of retinal separation usually in the form of an anterior disinsertion. In a recent case, the entire lateral half of the retina was torn at the ora and the retina displaced forward into the vitreous very much like a sail in a breeze. Such cases, of course, have an extremely poor prognosis. At other times, however, only a small peripheral disinsertion occurs and this responds well to the usual methods of retinopexy. It might be well at this time to recall an interesting case where retinal separation occurred some eighteen months after contusion of the eyeball with a slingshot missile. In this case, a patient came in to see the doctor because of loss of central vision as the retina became elevated progressively from the periphery towards the area centralis. It would seem that the patient did not notice the peripheral loss of vision and therefore the diagnosis was delayed. If this possibility is kept in mind, it would seem advisable to see the patient every month after severe contusion of the eyeball, whereupon the peripheral field and the peripheral retina could be inspected in order to pick up these cases early.

**Iris**

In severe contusion and lacerations of the eyeball, the iris is frequently affected. Lacerations of the pupillary margin and of the ciliary margin with the production of hyphema have been described previously. In cases of laceration of the cornea, the iris frequently prolapses through the wound thereby sealing it and preserving what is left of the contents of the eyeball. It is necessary under careful anaesthetic control to excise the prolapse and repair the corneal laceration by means of fine silk sutures. An iridodialysis, if large, may present the problem of monocular double vision, but ordinarily, it may be well left alone. When necessary, a repair by Wheeler's method can be done.

**Ciliary Body**

The ciliary body which is located under the sclera from 2½ to 7 mm. beyond the limbus is injured by severe contusion and often directly injured by means of a scleral laceration. Cases of injury of the ciliary body result in chronic inflammation of the eyeball and when this is severe, it may be necessary to remove the eye to prevent sympathetic ophthalmia. However, it is considered by most authorities that one has a two week period of grace and if the injury is not too severe, the overlying sclera may be repaired after cleansing the wound and excision of any prolapsed uveal tissue. Where the injury is obviously very severe, it is better to proceed to an immediate evisceration or enucleation as desired.

**Lens**

The lens has already been mentioned in contusion of the eyeball and one may note that a cataract of course, is the typical response of the lens to injury. These cataracts may be very slight or very severe and will require either no treatment in the former case to removal in the latter case. Dislocation and subluxation have already been recorded and their treatment suggested. A final note here may be taken about precautions that are required before removal of a traumatic cataract. It is necessary that the eye be free of inflammation for some time before this operation is performed, as otherwise a chronic low grade ocular irritation may be set up with resulting loss of the eye over a period of months.

**Intraocular Foreign Bodies**

It is important to remember that, when a patient reports an injury to the eye while hammering or while being near someone else who is hammering, especially when it is metal on metal, it is important to take an x-ray of the eye. I have seen several cases where a very tiny foreign body entered the eye and this was not realized at the time with a subsequent loss of the eye and often times of compensation because it was difficult for the patient to prove the cause and effect of the accident. Intraocular foreign bodies may be divided into those that are magnetic and those that are not magnetic and also into those that are opaque to x-ray and those that are more or less translucent to x-ray. Obviously, the ones that are not opaque to x-ray are more difficult to find and those that

are not magnetic are more difficult to remove so that the prognosis is seriously affected thereby. Where the intraocular foreign body is of glass or stone, it is, of course, not magnetic and difficult to remove and as these substances are often more or less inert, they may well be left in situ. In cases of copper inside the eye, it is quite essential to remove them as the copper exerts a very severe reaction in the eye known as chalcosis, and the eye is usually lost over a period of time if it is not possible to remove the copper foreign body. Such a foreign body may be removed by Thorpe's instrument whereby a small luminous instrument is inserted into the vitreous cavity and the foreign body removed by a small forceps under direct visual control. In cases of magnetic ferrous foreign body, the removal should be attempted and may be done by what is known as the anterior or posterior route. In the anterior route, a powerful magnet is used to draw the foreign body forward around the lens and into the anterior chamber where an opening is made by means of a keratome and the foreign body removed. This is not always possible especially in the cases of very tiny foreign bodies that are located well posteriorly. In such cases, it is preferable to remove the foreign body by the posterior route, through an incision in the pars plana in the meridian of localization.

**Orbit**

Where a fairly severe blow is received to the orbit a fracture dislocation of the orbital bones may result. When the floor of the orbit is depressed the eyeball sags and interferes with ocular muscle action with resulting distressing double vision. Immediate replacement is most desirable and may obviate later plastic procedures.

Penetrating wounds of the orbit may damage muscles, nerves and blood vessels in addition to causing orbital cellulitis. The latter can be treated by antibiotics. At times severe exophthalmus results from intraorbital retrobulbar hemorrhage. A pressure bandage is of value, and in one severe case encountered by the author dramatic improvement was achieved by means of aspiration of the blood.

When the patient presents himself with a "black eye" it is important to be able to distinguish between a local ecchymosis of the eyelids and one due to orbital fracture or basal skull fracture. Ecchymosis due to simple lid injury is able to spread beyond the orbital margin onto the cheek and forehead while bleeding due to orbital or skull fracture is limited to the orbital rim because of the attachment of the palpebral fascia to the orbital rim. In addition bleeding from an orbital bone or skull fracture is delayed some 12-24 hours and may be limited to the upper or lower lid depending upon the site of the fracture.

At times foreign bodies enter the orbit either through or around the eye. Several instances have recently been encountered, and it should be noted that when the foreign body is well within the orbit it should be left in position as it is very difficult to remove such a foreign body and damage may ensue to the orbital contents from an ill advised attempt in removal.

A direct blow to the orbit may result in intracranial and optic nerve damage as well illustrated by a recent case. This 14 year old boy fell off a tractor and struck the region of his left orbit with only a slight "black eye" as evidence. The left eye was normal to examination apart from a non-reacting dilated pupil and complete loss of vision. The fellow eye was normal thus indicating an optic nerve lesion on the left between the eyeball and the optic chiasm. A neurosurgeon found a slight systolic bruit over the area and subsequently a carotid-cavernous sinus shunt was demonstrated, the optic nerve became pale and exophthalmos developed.

**Eyelids**

A simple laceration of the eyelid parallel to the lid margin may be easily repaired by suture, but if the laceration is deep and in the upper lid, it is important to repair the tendon of the levator palpebrae superioris in order to prevent a blepharoptosis and to obviate a more difficult subsequent plastic repair.

Lacerations through the whole thickness of the lid margin are more serious, as notching of the lid margin, epiphora, ectropion, extropion and trichiasis will result unless a careful repair is made.

When the lacrimal canaliculus is severed immediate repair is very much more simple than a delayed repair. A lachrymal probe or polyvinyl 2 mm. diameter tube should be placed in the canaliculus and the canal repaired around the probe or tube so as to maintain the passage. The tube or probe should be left in place for 2 or 3 weeks and followed up by periodic probings and irrigations.

Severe chemical or thermal burns may cause much deformity of the lids through scarring, and the formation of a lid adhesion may tend to lessen the contracture and render later plastic repair more satisfactory.

**Retinopathy of Purtscher**

Severe crushing chest injuries may result in a typical fundus picture comprised of fluffy greyish retinal opacities near the blood vessels, as well as retinal and subhyaloid hemorrhages due to fat embolism. In those patients that live optic atrophy and retinal degeneration are the legacy.

**Compression Cyanosis of the Retina**

This retinal picture consists of engorged dilated veins, retinal oedema and hemorrhage as well as papilloedema and follows compression of the thorax by heavy weights.

# The Psychological Aspects of Trauma

John Matas, M.D.

In general medicine the word "trauma" refers to a physical event which results in harm. The theory advanced about 100 years ago by Dr. H. Oppenheim, to explain the neuroses following trauma which he called the "traumatic neuroses," accepted the medical definition of trauma and stated that the illness was due to actual molecular changes in the central nervous system. It was generally understood that, while injury to the entire body was involved, the injuries to the head and the brain were especially conducive to psychological sequelae. Since then, largely under Freud's influence, the word "trauma" has been broadened to include social and psychological situations which cause a man suddenly to feel seriously threatened by danger with the realization that he is helpless to cope with it. Currently, most psychiatrists use the word "trauma" with this broadened psychological meaning in discussing clinical conditions with the exception of "post traumatic neurosis," where it is tacitly understood that the syndrome under discussion is one that followed a head or brain injury, or more rarely an injury to other parts of the body.

In the following paragraphs the word "trauma" will be used in its medical sense rather than in its widened meaning as used in psychiatry. However, in the usual psychiatric meaning, all emotional illness is ultimately traumatic in origin. In this sense, as indicated, trauma may be regarded as psychological or physical or both. Early psychic trauma, for example, may lay the foundation for later emotional illness. The effect may remain latent, contributing, however, to the later vulnerability of the individual to either physical or psychological traumatic events, which then serve as precipitating factors.

The individual's reaction to anticipated physical injury has been studied in two settings: under war conditions, and in surgical patients. The intensity and the frequency of these reactions in both settings, depend on many factors.

In the surgical patient, the incidence of these reactions is related to the frequency with which the patient has had previous operations, the relationship he has had with his attending physicians and how his fears have been handled. The fears will be present for reasons aside from the ones related to surgery in general. For example, a planned hernia operation will stir up conscious and unconscious fears of genital injury. If the operation is to be on the heart or chest, fear of loss of life is in the fore.

In the military setting, the length of time the individual has served in a combat situation, how he has identified himself with his colleagues, how well he is led, and how deeply convinced he is in the cause, are important.

In both settings, the personality and the life experience of the individual are, of course, of overwhelming importance in determining the readiness with which adverse psychiatric reactions occur.

Marcus D. Sheffer and F. E. Greifenstein[1] report on "The Emotional Responses of Patients to Surgery and Anaesthesia." They studied 100 patients between the first and tenth post operative days. They divided the 100 patients into two groups. The control group of fifty were studied by questionnaire. The second group received identical questionnaires and directions, but each member was additionally subjected to a 35-45 minute psychiatric interview.

In this study they stated that the most frequently used mechanism by which patients sought to avoid conscious recognition of fear before operation was denial. However, in many instances what they called denial of fear was probably suppression or deliberate pushing away from awareness.

Denial is a commonly used defence against disaster. It is one of the simplest and most primitive kind of ego defence. By its use, what is consciously intolerable is simply disowned by the protectively automatic and unconscious denial of its existence. Like all other mechanisms it operates outside of and beyond conscious awareness to allay anxiety. Many examples of denial are seen in medical practice; many terminal patients attitudinally deny the prospect of approaching death. In combat conditions, it operated frequently as indicated by such common sayings: "If your name is not on the bullet you are safe," "Yes, it might happen to someone else, but not me." In effect, one becomes the all powerful master of chance and fate[2].

Another mechanism used to handle their anxieties by these patients is that of converting them into somatic symptoms. This is also a frequently used mechanism by which patients handle their anxieties in other contexts. Exactly what happens is not known, individuals relegate their anxieties to the unconscious, but the difficulties are not thereby abolished. They are subsequently expressed through somatic symptoms in the voluntary musculature or the special senses.

In this study, frank anxiety symptoms occurred in a large percentage of the subjects. Sleep disturbance of various kinds occurred in about half of them. Nightmares were common, and these were of the kind that indicated the patient's hostilities were stirred up. In all instances except one, the dreams were characterized by destructive wishes in which members of the patient's family or he himself were threatened by danger.

Obsessive rumination concerning the operation occurred in about one third of the patients. Others showed compulsive nail-biting and compulsive hair rubbing.

About one third of the patients showed disturbance in mood level. These persons showed fatigue, loss of interest and energy, a tendency to weepiness and fixed ideas of unworthiness.

About one fifth of Sheffer's and Greifenstein's patients developed what they call "distortions of reality." By this term they referred to such fears as "going to pieces completely," "fear of dying" and strong beliefs expressed as "no matter what I do, if I have this operation, then something awful is doomed to happen to me."

Another mechanism frequently used, not mentioned in this study, is conscious rationalization. Such as "count your blessings," "it's always darkest before the dawn," and so on[3].

By contrast there is the neurotic patient who seeks surgery too avidly[4]. Menninger[8] thought these patients were hopefully turning to surgery in order to avoid facing up to their emotional problems.

In the military setting when the soldier's defences break down and he feels himself imminently threatened, a fairly characteristic group of symptoms occur. Appetite becomes poor, the soldier becomes careless, develops jumpiness, exposes himself heedlessly, freezes to the ground, becomes afraid of the noise of his own artillery, loses his ability to relax and develops characteristically the inability to sleep because of perpetual nightmares. The symptoms are not uniform — one person may develop tremors, a tic or depression, while another develops choreiform movements, stammering amnesia, irritability and insomnia.

As these symptoms progress, the full illness is seen. In this the individual has an altered concept of himself and the world. He complains of the catastrophic dream which is the most universal earmark of the traumatic syndrome. These dreams are of constant failure to consummate successful action. The patients become irritable, startle easily and are prone to explosive aggressive action. With all this comes a contraction of general level of functioning, including intellectual ability. It should be pointed out of course, that combat reaction is not a reaction expressing only anticipated fear of bodily injury. Usually by the time these reactions develop, the patient has been exposed to a great deal of psychic stress which has weakened his defences.

Following trauma, people's reactions have been scrutinized in two sets of circumstances. In one of these, namely, following surgery, these reactions are not of overwhelming clinical importance, and as a result have not forced themselves upon medical attention. However, there has been a great deal of study given them recently in Cincinnati[5]. The psychological reactions following accidents both in and out of industry, particularly if there is a possibility of compensation, have been of importance in industrial medicine.

It should be emphasized that there is a marked individual variation in response to varying degrees of trauma. The reaction to trauma is a highly individual matter. There are two aspects of this. One relates to the individual's ability to stand any injury under any circumstances. The other relates to the individual's ability to withstand certain specific types of injury.

The usual emotional effect at the time of injury is a feeling of helplessness. This is followed by anger. Occasionally there is a constriction of awareness enabling the individual to maintain a calm state for a short period[5]. Most victims of injury quickly recover from any emotional effects. A few develop difficulties which in turn are likely to vary widely in their extent and degree. It becomes amply clear that the onset and degree of emotional disturbance is by no means necessarily in direct proportions to the intensity or the extent of the trauma. The pre-existing personality make-up and the adjustment are vital in determining what will be the response of any given person. Individual susceptibility and vulnerability run the gamut of possibilities.

The ability to stand up to specific types of injury also depends on the personality needs. A high percentage of people develop psychoneurosis following head injuries. This is due to the high investment most of us have in our head and the sense organs associated with it. We are inclined to overevaluate everything associated with this part of our body and conversely assume too readily that any injury to the head is the cause of any symptoms that follow. In response to sexual trauma, such as a hysterectomy, the likelihood of developing a severe emotional reaction depends on how important this symbol of femininity is to the individual.

A study carried out by Doris Menzer[6] at the Harvard Medical School illustrated how the effects of a specific type of physical injury were related to needs of the personality. She indicated that the women who did poorly after a hysterectomy were those whose lives revolved almost completely around reproductive functioning and gratification in motherhood. Those who did best were the ones who had successfully worked through the loss of the reproductive function in the menopause and turned towards masculine pursuits. The likelihood of developing a neurosis following an industrial accident also depends on the circumstances and the personality of the individual.

In other words, the effect of an injury on the personal psychological economy will depend upon the amount of threat which is experienced subjectively and not necessarily upon any objective evaluation. The problem may have some symbolic meanings and individually important and specific unconscious meanings.

The psychiatric reactions seen following surgery include both organic and functional ones. Only the functional ones will be considered here.

A depressive reaction is a common finding after an operation. In a review of 200 patients by Zwerling et al[7] they found five psychotic depressions. These occurred in people who lived an isolated life or were aged.

The results of surgery are not always bad psychologically. Menninger[8] has called attention to the fact that psychoneurotic patients and depressive patients are sometimes promptly cured by an operation whether necessary or not. The usual explanation for this is that physical injury or suffering serves to expiate unconscious feelings of guilt. Such an unconscious need to suffer or to be punished is present in various degrees in neurosis generally. The success of electric shock therapy has been explained by some authors on the basis of gratification of unconscious needs for punishment.

There are others who, after periods of freedom from symptoms, develop psychiatric distress following an operation. Symptoms such as sleeplessness, restlessness, agitation, anorexia and irritability have been reported. These usually go on for about six to eight months before abating[12].

Another effect of surgery reported by Titchener[9] is a change in type of psychoneurotic symptoms displayed by the patient. For example, neurotic symptoms might replace somatic symptoms. A woman who had previously complained of dysmenorrhea after a fibroid uterus was removed began to show anxiety, depression and delusions of persecution. He also saw somatic symptoms replacing neurotic symptoms. A shift occurred in another way; that is, neurotic symptoms replacing behaviour disorder. He described the man who gave vent to his rebelliousness by weekend drinking and fighting. He fell from the end of a scaffold and was admitted for a possible fracture of the cervical vertebrae. Following his discharge he began to have attacks of trembling, perspiration and palpitations. He had severe headaches, startle reaction and frequent nightmares.

The cases seen following industrial and other civil accidents are those in which there is either a neurotic exaggeration of the symptoms following an injury, or a neurosis where the actual injury is minimal or seemingly insignificant. For that matter, it is usually the individual with the minor injury who has likely developed the neurosis and not the one where the compensative nature of the injury is obvious.

It is clearly recognized now that the patient's desire for what he considers adequate compensation is not the only factor in the production of a neurosis found in industrial accidents. For example, it has been demonstrated that a person with a paranoid tendency, those who are insecure, those who crave sympathy and attention are predisposed to compensation neurosis. The same is true of the individual who finds himself in an employment situation that is becoming progressively more unbearable. The necessity, because of financial obligations, for continuing to work beyond the mental and physical capacity, or the failure to derive satisfaction from one's work may predispose to a traumatic or compensation neurosis.

Traumatic or accident neurosis rarely occurs when the victim of the injury must bear the brunt of the financial responsibility for the accident, as in the cases of injury sustained in sports.

It is argued by Ebaugh and Benjamin[10] that in many cases of trauma where there is no question of compensation hysterical symptoms do occur, showing that the compensation motivation is not essential. In many other cases where the desire for compensation is present it is not of real importance because the patients improve with therapy irrespective of whether or not they receive compensation.

An interesting feature of industrial accidents is the time lag from minutes to months, (occasionally even years) before the onset of the symptoms. The patient may likewise delay for some time before he attributes the responsibility for the difficulties to the earlier accident. It is almost as though the individual reacted so as to enable him to cope with the situation in hand before "giving in" to the trauma.

The symptoms of the accident neuroses are various, but these neuroses do not differ in essential features from other neuroses except in the matter of compensation and the sharpness of the precipitating event. Frequently the symptoms include irritability, stubbornness, argumentativeness, crying spells, anxiety, depression, sleeplessness, headaches and dizziness. Frequently, conversion symptoms are sufficiently prominent so that compensation neuroses are often classified amongst the hysterias[10].

**Bibliography**


1. Marcus D. Sheffer and F. E. Greifenstein: "The Emotional Response of Patients to Surgery," Anaesthesiology. September-October, 1960.
2. Laughlin: The Neuroses in Clinical Practice. Saunders, 1956.
3. Ibidem.
4. Bennet, A. and Engle, B.: Faulty Management of Psychiatric Syndromes simulating organic disease. J.A.M.A., 1395: 1203, 1946.
5. Surgery as a Human Experience. Titchener, J. L. and Levine, Maurice. Oxford, 1960.
6. Menzer, Doris, Morris, T., Gates, P., Sabbath, J., Robey, H., Plaut, T. and Sturgis, S. H.: "Patterns of Emotional Recovery from Hysterectomy." Journal of Psychosomatic Medicine 19: 5, Sept.-Oct., 1957.
7. Zwerling, I., Titchener, J., Gottschalk, L., Levine, M., Culbertson, W., Cohen, S., Silver, H.: "Personality Disorder and the Relationship of Emotion to Surgical Illness in 200 Surgical Patients." American Journal Psychiatry, 112: 270-277, Oct., 1955.
8. Menninger, K.: "Poly Surgery and Poly Surgical Addiction." Psychoanalytical Quarterly, 3: 173, 1934.
9. Titchener, J., Zwerling, I., Gallschalk, L., Levine, M., Culbertson, W., Cohen S. and Silver, H.: "Consequences of Surgical Illness and Treatment." A.M.A. Archives of Neurology & Psychiatry, 77: 6, June, 1957.
10. Ebaugh, F. G. and Benjamin, J. D.: "Trauma and Mental Disorders" in Brahdy, L. and Kahn, S. (Eds) Trauma and Disease, pp. 231-272. Lea & Ferberger, Philadelphia, 1937.
11. Modern Clinical Psychiatry. Noyes and Kolb, fifth edition. Saunders, 1958.
12. Lindemann, E.: "Observations on Psychiatric Sequelae to Surgical Operations in Women." American Journal of Psychiatry, 98: 132-139, July, 1941.

MANITOBA CHAPTER

# COLLEGE OF GENERAL PRACTICE OF CANADA

## *Fifth Annual Scientific and Business Meeting*

**ROYAL ALEXANDRA HOTEL, WINNIPEG**

**MAY 1st, 2nd, 3rd and 4th, 1961**

### Monday, May 1st

**Morning**

9:00 Congestive Heart Failure
Physiology
Management
Diuretic Agents
Dr. M. Nickerson, Winnipeg

10:00 Exhibits

11:00 External Eye Diseases
Dr. Kirby, Mayo Clinic

**Afternoon**

1:30 Skin Diseases Affecting the Eyes
Dr. Kirby, Mayo Clinic

2:30 Exhibits

3:30 Toxemia of Pregnancy
Dr. T. R. Nelson, Edmonton

### Tuesday, May 2nd

**Morning**

9:00 Oral Hypoglycemic Agents
Dr. L. L. McConnell, Winnipeg

9:30 Techniques in Diagnosis of Carcinoma of Cervix and Uterus
Dr. T. R. Nelson, Edmonton

10:00 Exhibits

11:00 Rehabilitation in Manitoba
Dr. Truelove, Winnipeg

**Afternoon**

1:30 Heart Sounds and Murmurs
Innocent
Rheumatic Heart
Congenital Heart
Surgical Lesions
Dr. G. Cummings, Winnipeg

2:30 Exhibits

3:30 Heart Surgery
Indications
Techniques
Patient Counselling
Dr. G. Cummings, Winnipeg

6:30 Annual Business Meeting, Royal Alexandra Hotel
Guest Speaker: Dr. G. Johnson
MEDICARE

### Wednesday, May 3rd

**Morning**

9:00 Cancer Radiation Therapy
Present Status
Dr. Walton, Winnipeg

10:00 Exhibits

11:00 Cancer Chemotherapy
Present Status
Dr. L. Israels, Winnipeg

**Afternoon**

1:30 Psychosomatic Medicine in General Practice
Dr. Lander, Black Diamond, Alta.

2:30 Exhibits

3:30 "I Want a Check Up" (Panel)
Dr. G. Diehl (Chairman)
Dr. Houston, Winnipeg
Dr. Matheson, Winnipeg
Dr. Dwyer, Winnipeg
Dr. Avren, Winnipeg

6:30 Annual Dinner and Dance, Alexander Room, Royal Alexandra Hotel
Guest Speaker: Dr. Lander
Alcohol and the Mind

### Thursday, May 4th

**Morning**

9:00 Traffic Accidents
Causes: Dr. Penner
Medical Requirements for Driver's Licence: Dr. DuVal
Ambulance Facilities: Dr. Welply

10:00 Exhibits

11:00 A Look at Traffic Accidents (Panel)
Dr. Reid, Selkirk (Chairman)
Medical Member
Legal Member

**Afternoon**

1:30 Prolonged Labor
Dr. T. R. Nelson, Edmonton

2:00 Peptic ulcer
Dr. M. Suter, Winnipeg

2:30 Exhibits

3:30 Hypnosis:
Introduction and Demonstration
Dept. of General Practice, Grace Hospital
Chairman: Dr. D. Hastings

Registration Fee $20.00 (Includes Dinner and Dance Tickets, Annual Dinner Meeting) 24 hours credits

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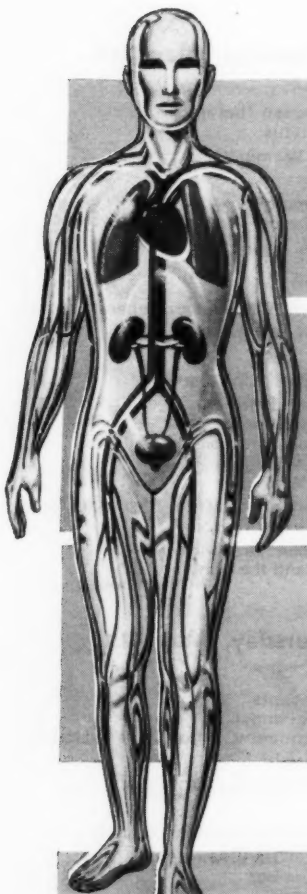

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# Medical History

## The Coroner Then and Now: A Few Observations

**Athol R. Gordon, M.D.**

Old books, old wine, old Nankin blue
All things, in short, to which belong
The charm, the grace, that Time makes strong****
All these I prize, but (entre nous)
Old friends are best.

Austin Dobson
To Richard Watson Gilde.

The probe of research in any field frequently brings to light new facts which take their place in the fabric of history. With constant repetition, they assume a mantle of unimpeachable respectability. To question them becomes almost a heresy. But now and again some exploring enthusiast rends the mantle, exposing the cherished fact as an error with the holy joy of a Puritan discovering a harlot.

Because of one of these ravishments I dare not with complete certainty tell you that the office of coroner began in the reign of King Alfred made famous by his culinary accident. He is said to have put thirteen judges to death on the grounds of injustice; and in the case of one of them for having sentenced a man to death on verdict of the coroner's jury. I still cherish the story as not at all improbable. They were indeed great days when Truth and Justice and Freedom were entering into the root structure of the British people.

In 1194 about the time when the English fleet was despatched to Antwerp to bring home the ransomed King Richard for his second coronation, a new office appeared in the legal documents of the day. The officer was called "Custos placitorum Coronae"—Custodian of the pleas of the Crown. Soon afterward in a charter, the words "per coronarios comitatus Sumerset" are found. This officer appears again in the Magna Carta (1215), by this time well established in the legal system ensuring the proper gathering and payment into the royal coffers of monies accruing from the sale of the chattels of felons and the sale of the instruments causing death of the king's subjects, such as scythes, bulls, swords, horses (deodands)*. On behalf of the king, the coroner saw to it that the sheriff did not profit, as he used to do prior to the arrival of the coroner upon the legal scene. Wrecks, royal fish (whales and sturgeon) and treasure trove also fell under his inquest. He was already holding inquest upon sudden deaths, deaths by violence, and deaths in prison. He also heard accusations of felonies, conducting what would be called the preliminary hearing in our police court of today. He declared the forfeiture of possessions of those who, falling under the king's displeasure, became outlaws. As for those poor wretches who fled to sanctuary, they made their abjurations to the coroner. In the exercise of these rather widely different functions the coroner was supported by a jury of not less than seven and not more than twelve. In those early days he also dealt with cases of rape and arson. The royal coffers were appreciably swelled by the assiduous efforts of the "Custodes placitorum Coronae."

Just downstream from Windsor, the Thames meanders slowly through a great low lying meadow called Runnymede, as a stern and unyielding delegation of the people wait upon the petulant, thwarted and angry King John, flanked by his equally thwarted and angry barons, as they feel for the first time the chafing of the shackles of limitation of their absolute power. King John affixes his royal seal to the Magna Carta and with his lords and barons bows perforce to the mandate of Vox Populi. At the 32nd line of the Charter it is agreed that "no sheriff, constable, coroners or other of our bailiffs shall hold pleas of our Crown." Here ended the financial usefulness of the coroner to the king, except in the matters of treasure trove and deodands; but the voice of the people still sounded through the verdicts of the coroner's jury as regards the death of any of the king's subjects under any but the most normal circumstances. From this time on, the coroner's court became essentially a court of record.

Many abstracts contemporary with the originals are to be found in the Public Record Office, all filed according to Counties; and, as we leave the mediaeval coroner, let us listen to a translation of the earliest record of an inquest held on the view of a body: "Hundred of Barford (Bedfordshire) . . . It happened at Barford on the morrow of July 26th, 1265, of St. James the Apostle, in the 49th year of King Henry, son of King John, that Henry, son of John of Bretville of Barford, who was 10 years of age, went at vespers, into his father's yard to play, and fell into a ditch and was accidentally drowned. His father promptly searched for him and lifted him out of the water and sought to save him; he did not succeed in doing this; the son died immediately after being taken out of the water. The said John found pledges: John of Blunham of Barford, and Robert of Bolnhurst of the same place. Inquest was made before G. Rowland, the coroner, by four neighboring townships, Barford Roxton, Renhold, Wilden: They say that as far as they

*DEODAND: Derived from the Latin "Deo Dundum" . . . a thing to be given to God. The application of monies derived from the sale of lethal objects to the relief of the distressed dependents of the deceased person, was then, an act based on humanitarian considerations; but in the twelfth and thirteenth centuries the diversion of numerous small sums to the royal treasury is seen today as an easy matter indeed.

Presented at the meeting of the Historical Section of the Winnipeg Medical Society, January 31, 1961.

know it was an accident as aforesaid." As you see, the finder of a body had to find pledges for his appearance at the inquest; and we may wonder how often a material witness took example from the biblical Pharisee and "passed by on the other side" . . . The practice is certainly in vogue today.

The earliest recorded inquest is dated 1200 and concerns a charge of theft. At first it was a prerequisite that a coroner should be a knight, but later a land and money qualification equivalent to knighthood was deemed sufficient. If derelict in his duty, he would be able to pay the fine levied against him. If he could not pay it, the county was duly asssesed. From our present position we shall have to look forward some 784 years, before this qualification was abolished.

When London was a city of about ten thousand it began to suffer from traffic problems; and it is from the Coroner's Rolls of 1337 that we find preserved the story of one of England's earliest "hit-and-run" drivers together with a clear application of the deodand: "On Thursday February 13th, about the hour of vespers (this almost certainly means 6 p.m. on a cold miserable rainy night with everyone in a hurry) . . . two carters taking two empty carts out of the city were urging their horses apace, when the wheels of one of the carts collapsed opposite the rent* of the hospital of St. Mary's Bishopgate, so that the cart fell on one, Agnes Decicestre, who immediately died. The carter thereupon left his cart and three horses, and took to flight in fear, although he was not suspected of any malicious intent. The cart and trappings were appraised by the jurors of the ward of Bishopsgate:

"Cart and trappings ..... 6/8d.
The first horse of a dun colour ..... 10/
The second horse, grey, blind in both eyes ... 4/
The third horse ..... 6/
5 old sacks with 5½ lbs. candles ..... 16d.

for which John de North, one of the sheriffs will answer."

72 years later there a statute is recorded by one John Carpenter, a clerk in a legal book called Liber Albus, which reads as follows: "No carter within the liberties shall drive his cart more quickly when it is unloaded than when it is loaded, for the avoiding of drivers perils and grievances under pain of paying 40d. ($5.00) into the chamber, and having his body committed to prison at the will of the mayor."

Thus step by step, the law of the people grows for the protection of the people against the people; and the coroner, his court and his jury have no small share in the evolutionary development of the Law as it stands today. Full many a warning bell and flashing railway crossing signal would say if it could speak: "Stop . . . look . . . listen . . . Death came this way. I am here at the bidding of the coroner's jury."

The year 1571 was a year of ferment, treason, and religious intrigue in England. Heads were falling on Tower Hill, and the informer was reaping his reward. It must have been difficult indeed to summon a non partisan jury. The strength of the English sense of justice shines forth at this time, as a statute for the attaint of jurors giving corrupt verdicts was made perpetual. The stern and terrifiying atmosphere of those times is reficeted today in the oath given to the foreman of the coroner's jury as the inquest opens: "You shall diligently inquire and true presentment make of all such matters and things as shall be here given you in charge on behalf of our Sovereign Lady the Queen, touching the death of John Brown now lying dead, of whose body you shall have the view. You shall present no man through hatred, malice, nor ill will; nor spare any through fear, favour, or affection, but a true verdict give according to the evidence and the best of your skill and knowledge, so help you God."

The year following the passing of this statute, an inquest was held down in Kent, the hop country. I hope it stirs your sense of history and tradition. It is in Latin of course put down by the clerk. The translation follows: "An inquest was held at Hungershall Lodge in the Parish of Spellhurst in the aforesaid county on the 17th day of September in the Fourteenth year of the reign of our Lady Elizabeth, by the grace of God, Queen of England, France and Ireland, Defender of the Faith etc. in the presence of John Fremlin nobleman, one of the coroners of our said Lady Queen in the said county upon the body of John Baker, yeoman, of the said Spellhurst, the same lying dead and killed; upon the oath of Robert Grumgridge, Thomas Slace, Nicholas Reade, William Cund, Nicholas Hammond, Richard Raven, Henry Savage, Henry Buss, John Moyse, Oliver Goldsmith, William Goldsmith, William Oxley, William Mercer, Rudolph Simon, Alexander Roger, Richard Beach and Thomas Beach, jurors. Who say on oath that it happened thus, viz; that when a certain Abimelech Johnson of Eridge in the county of Sussex, yeoman, serving the most noble Henry Neville, a soldier of Lord Abergavenny, both on the 15th day of this present month of September in the aforesaid year and at divers other places and times previously by special mandate and command of the said Lord Abergavenny his lord, was assigned and appointed . . . and he occupied himself from day to day in the shooting of a gun loaded with gunpowder, and with lead shot; and while occupying himself shooting with a gun, this same Abimelech Johnson wounded and killed birds, hunting, called Hawk's Meat for the said Lord Abergavenny, his master. On the said

*The rent of the hospital . . . indicates a land area separated or "torn from" the adjoining land. OED.

15th day of September, in the above mentioned year, about the second hour of the afternoon in the same day, he went forth in the park of Hungershall of the said Lord Abergavenny, his lord, of the aforesaid Eridge in the aforesaid county of Sussex, a part of the forest of Waterdown in the said County of Sussex, which namely, the park of Hungershall in the forest of Waterdown, are the lands and possessions of the said most noble Lord Abergavenny . . . and while this same Abimelech Johnson in the County of Sussex, seeking the opportunity to shoot and to discharge the aforementioned gun towards some birds which he would shoot and kill for the aforementioned hunting of food, then namely at about 4 p.m. on the said 15th September of the above year this same Abimelech Johnson, perceived a certain bird called heathcocke in a hawthorn tree growing close to the ground in the said park in the said county of Sussex, beyond which tree the aforementioned John Baker was sitting on an old root of a certain other spiny tree, the same which was growing in the middle of some thick ferns called 'brakes,' under which growth he was hidden and concealed, watching and devoting his attention to a fallow deer on a certain hill in the said park, which was feeding close to him, who thought himself safe, towards whom the said Abimelech Johnson shot his aforementioned gun, the said gun being fired and let off by the aforesaid Abimelech Johnson, the said John Baker sitting in the middle of the braken on the root of the tree, was stricken and wounded in two parts of his body, viz; the right part of his stomach, and in his left side, unexpectedly and by mischance. The wound was such that it went from the said right side through his said left side, making such a wound that from this wound, the same John Baker, from the said 4 p.m. on the 15th day of September in the aforementioned year, until 7 o'clock in the morning of the 16th day of September of the aforementioned year, the said John Baker died of the same above-mentioned wound. This wound was in width half an inch, and in depth through the body of the said John Baker, and so the aforementioned say an oath that the said John Baker on the same day, and at the time mentioned above, at the said Hungershall Park in the County of Sussex, was killed accidentally in the way and fashion mentioned above, and that his death occurred thus and not otherwise." (Public Records Office, C 47/81/6/no. 205).

At this point there is, on account of time, a necessary gap in this story which was in some measure filled for you in my paper on "Three inquests of historic significance." Perhaps you may remember that they were concerning Katharine Hamnet, and the details were lifted almost en masse into William Shakespeare's description of the death of Ophelia. Then followed a few observations on the death and inquest on Christopher Marlowe. Lastly the famous case of Mary Blandy the ruthless poisoner in the reign of George II (1752).

Some time between 1838 and 1862 Mr. Thomas Wakeley was the coroner for West Middlesex. He was also an M.P. and the founder of The Lancet.

I thought you might be interested in a curious old print showing an inquest held before Mr. Wakeley.

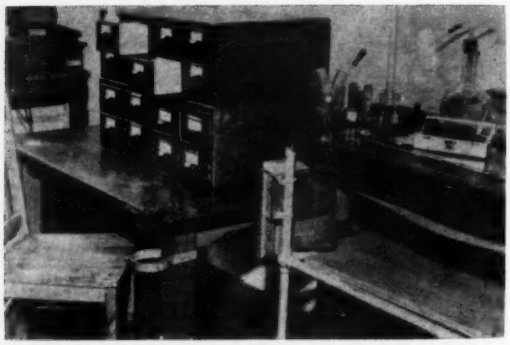
You will observe the child witness with the Beadle at his right. The figure standing at the left of the coroner is Charles Dickens.

In 1906 the evidence of a young pathologist from St. Mary's resulted in the coroner's jury's verdict of death due to criminal abortion at the hands of an unknown. The most implacable adversary of the abortionist had entered the arena and began to lay the foundation of forensic medicine, and to raise that science to a high pinnacle of respect and

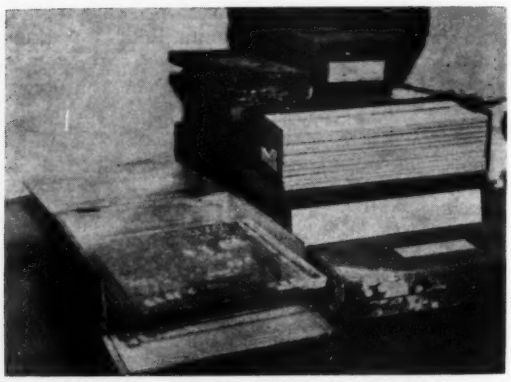
Sir Bernard Henry Spilsbury

importance in the legal system of Great Britain. His name was Bernard Spilsbury. Although sorely tempted to digress, I must leave it to you to explore that fine field of reading, if you have not already done so . . . (Bernard Spilsbury, his life and cases . . . by Browne and Tullett, published by Harrap).

A niggardly Home Office paid him a miserable pittance and allowed him to work in a laboratory scarce worthy of the name. Here it was where in the depths of despond and frustration he finally took his own life December 17, 1947.



**Spilsbury's Laboratory at University College, London**
The cabinet contains the famous case-cards.



**Microscope Slides in Spilsbury's Laboratory**

Mr. Justice Darling, the great and caustic luminary of the British High Court, referred to him as "That incomparable witness."

The next phase of this presentation should properly be something of the nature of an examination of the office of the coroner today.

There are coroners by virtue of their office as in the cases of the Lord Chief Justice of England, and the judges of the High Court of Justice. There are county and borough coroners, there are coroners by appointment, as in the case of Canadian coroners, and there remains an ancient office—that of the coroner of the verge. This last coroner had jurisdiction over a 12 mile radius round the person of the Sovereign, wherever he or she might move the court. In the past this doubtless ensured a discreet handling of certain incidents arising among the royal entourage, which otherwise might have given rise to more than a breath of scandal. This honorary and royal appointment now covers the actual palace of the sovereign.

That eminent practical and political jurist Sir Wm. Blackstone who lived and wrote in the reigns of George II and III (1723-80), who made himself such a name as to render his Commentaries on English Law a reference still used and quoted in the courts today described the coroner's court of Record as: "A court whereof the acts and proceedings are enrolled for perpetual memory and testimony . . . which rolls are called the 'rolls of the court' and are of such high and supereminent authority, that their truth is not to be called in question . . . for it is a settled rule and maxim that nothing shall be averred against a record, nor shall any plea or proof be admitted to the contrary."

The office of coroner was at first an elective office; and by the Statute of Westminster (1275) passed in the reign of Edward the First, the holder of the appointment was chosen from the ranks of the Knights. Later, a property qualification of 20 pounds per year was deemed sufficient qualification; but in due time even this qualification was removed. Again we hear the judicial voice of Sir Wm. Blackstone, this time, however, perhaps with a slightly plaintive note as he says: "Through the culpable neglect of gentlemen of property, this office has been suffered to fall into low and indigent hands." As I read those words from the 16th century I am conscious of a slight quiver of apprehension.

When James I attempted to enforce the royal prerogative in cases before the ecclesiastical courts the then Chief Justice, Sir Edward, Lord Coke alone of all the judges stood firmly against the attempted intrusion, as his fellow judges, cowed and frightened, knelt before the raging king, who for his opposition removed Sir Edward from the office of Chief Justice. This outrage was but one of the rumblings of a discontent with tyranny which culminated in the execution of the following monarch Charles I. Lord Coke gave five qualifications as necessary to the holder of the office of coroner: "Honesty, knowledge of the law, general knowledge, ability and power to execute his office according to his knowledge . . . of diligence and attendance for the due execution of his office: And these for three reasons: viz. (1) . . . The Law presumes he will do his duty and not offend the Law for fear of punishment, whereunto his lands and goods are subject. (2) . . . That he will be able to answer the king with all such fines as belong to him, and to discharge the county thereof. (3) . . . That he may execute his office without bribery.

Today, the field of the coroner's inquisition is somewhat narrowed. He no longer inquires into

Royal fish (whales and sturgeon) coming ashore. This is, I think, a humane and a good decision. Can you imagine anything more horrible than standing on the Goodwin sands on a hot June day, beside the bloated decomposing carcass of a 75 foot whale, and calmly establishing the fact that Her Majesty had indeed not been robbed, except by an act of God?

The power of the interdict in the matter of sturgeon, is felt even to the present day, and even by a leading light of the British legal profession.

Sir A. P. Herbert says:

> The sturgeon belongs to the King,
> And if in some desolate chasm,
> You feloniously catch one or two on a string
> You must see that His Majesty has 'em.
> A. P. Herbert.
> (The chameleon).

The Coroner no longer inquires into Treasure Trove, nor into the origin of fires (except in the city of London), nor into estates of a value over $300.00.

The Coroner's court is a criminal court, dealing to a limited extent with cases where the Criminal Code may have been infringed; and so when Death finally triumphs and the medical battle is lost, the Law seeks to be satisfied beyond a peradventure, if at all possible, upon the following points: WHO was the deceased, HOW, WHERE, WHEN and BY WHAT MEANS death came. This is the chief duty of the Coroner, his court and his jury.

The Coroner is a judge in his own court, the only place where, in the interest of arriving at the true facts, hearsay evidence is permitted, for assessment by the jury.

The simplicity of the four-fold objective of the coroner's court accounts for the comparatively slight changes in court language and procedure, from times now long passed. The jury is still sworn 'super visum corporis' in Manitoba, though not in all the provinces. This is a good thing in that it brings home to the juryman in solemn form both the sacredness of his oath, the importance of his duty and the dignity of citizenship. The court officer still opens the proceedings with the ancient crier's words, "OYEZ . . . OYEZ . . . OYEZ"—the ancient words of the ancient herald making a proclamation on behalf of the sovereign. But, alas, for modern youth not trained in the classical tradition . . . a young police officer once opened my court with the colloquial, yet scarcely equivalent: "OH YEH . . . OH YEH . . . OH YEH!" only to be outdone on a similar occasion by one who opened it with the emphatic but hardly appropriate: "Oi . . . Oi . . . Oi."

As the barque of world opinion steers its perilous course between the Scylla of world famine, and the Charybdis of race suicide, the dead body of an infant is to the medical jurist a human sphinx . . . full of riddles: Mature/immature . . . Born alive/dead . . . Was it killed? . . . If so, HOW? . . . Was death natural? . . . If so, WHY?

My case book would throw light of all colours on such things and the things that follow; but we must ride the horse of verbosity with the snaffle of restraint.

The coroner's jury of today has power to exonerate, commend, censure, fix responsibility and make recommendations in the interest of preventing a repetition of the event which gave rise to the enquiry. The exoneration or failure to fix responsibility does not prevent the Crown from subsequently in the light of further evidence, laying a charge. However, except in the most exceptional cases, the fixation of responsibility makes it mandatory upon the Crown to proceed.

Today the Attorney General's department is represented in the coroner's court as of right; and this is of great assistance in keeping the coroner on sound legal ground. It must be remembered, however, that much necessary questioning by the Crown is somewhat of a reflection on the thoroughness of the coroner's own questioning. And above all it is a basic fact that the Crown itself only questions by permission of the coroner. Counsel for interested parties question only on permission of the coroner. Again I hear my case book muttering. The witnesses should be fully protected by the coroner from adroit attempts by counsel to bias the proceedings in his favour.

A witness, on his own, or at the direction of his counsel may ask for the "protection of the court." This is always given by the coroner and implies that the witness must answer all questions in conformity with his oath, but his answers to those questions may NOT be used against him at a subsequent trial arising out of the inquest, UNLESS THEY ARE FALSE, in which case they will most certainly be used against him in a subsequent trial for perjury. Queerly the coroner may not himself offer this protection. It must be requested.

In our community life, the development of machines, the element of speed, the use of materials in industry and commerce, takes a truly fearful toll on human life — the basic essential if society is to continue. Death, the great disrupter of the even tenor of our way, is still to us a dreadful mystery shrouded in grief, superstition and fear. Our efforts to prevent the preventable deaths and to minimize the unpreventable ones, in that futile struggle for immortality as we forget that we are immortal, in our children. Every step taken to guard them is a step in the right direction. The coroner, his court, and his jury represent the commencement of that vital inquiry.

The sequence of events is somewhat as follows: A body is found, or a violent death occurs, or a death occurs under suspicious circumstances. Doctor, police and coroner are notified in varying order, depending on the circumstances. Doctor or registered nurse may pronounce death. The police survey the scene and call the coroner; but, if in

any doubt as to presence of life, they convey the victim to hospital, often to an official pronouncement of death. The hospital reports a D.O.A.

In cases of accident, suicide, or homicide the police collect all witnesses possible. In cases of death by apparently natural causes they try to find the person who last saw the deceased alive. In many cases they take charge of valuables, an important step in matters of money or estate. In the matter of estates of over $300.00, the estate is probated by the surrogate court, according to the terms of any will, should there be one, and equitably to those concerned in the absence of a will. The burial expenses are, of course, the first charge on any estate. Estates of UNDER $300.00 are placed in a special trust fund. Goods and chattels are sold at auction and the proceeds are placed in that fund. All this, of course, when there is no next-of-kin.

If necessary, the coroner surveys the scene of the death and hears the reports of police and witnesses. He then decides whether there will be an inquest and whether there will be an autopsy. He usually accepts the statement of the attending physician, but the inquest is still at the coroner's discretion. He may be forced to hold an inquest if the Attorney General requires one. But he cannot be forbidden to hold one.

The coroner directs that the body be taken where an autopsy can be performed and directs a pathologist to perform it and report the findings to him. Quite often the inquiry ends here.

Should there be an inquest the police subpoena seven jurymen, the subpoenas being over the coroner's signature. When the jury assembles they elect one of their number as foreman. This is their certain right. They then proceed to where the body is and are sworn 'super visum corporis." The foreman is sworn separately. The body is then identified to the jury and frequently to the pathologist. This last is sometimes for convenience done separately. The coroner, or at his direction, the pathologist then points out the external and visible signs of violence if such be present, reserving his detailed statement when the inquest resumed.

At this point the jury are sometimes taken to view the scene of the death and/or car, vehicle, machine, or instrument which caused the death.

The coroner then adjourns the inquest to a fixed date (which in Winnipeg must not be on a football, wrestling, or celebrity concert, or policeman's ball, or Burns Night, or St. Andrews night, or art school night, etc.). It at once becomes apparent how simple a thing the fixing of a date can become. In the last analysis the date is at the coroner's discretion, but it must be dreadful to be assassinated. The jury are warned that a penalty hangs over them for non-attendance at the appointed time; but they are assured that in the event of illness, a medical certificate will excuse them. (My case book is muttering again).

Meanwhile the police may be gathering witnesses and evidence, drawing plans of the scene, examining vehicles, weapons, roads, clothing and other relevant material.

The fixed date arrives and the court is convened in ancient form. The coroner charges the jury, warning them of their oath and responsibility. He informs the jury and counsel as to the rules for questioning of the witnesses. The identifier is called and the positive identification again made for purpose of the record. Then comes the pathologist who states the details of the autopsy and gives his opinion as to the cause of death. The medical evidence usually follows. Next comes the presentation and filing of plans and photographs. Then in the order best calculated to give good continuity to the story, comes the evidence of police and witnesses.

This procession of witnesses is a truly wonderful dramatic presentation by actors competent, terrified, biased or stupid. Here it is that the coroner can assist the jury by appropriate questioning, encouragement, or repression.

To control the garrulous witness is to attempt to stem a highland stream in spate. The grief-stricken witness must be handled with sympathy and discretion. The evidence of the earnest witness may be a mass of trivial chaff, requiring considerable winnowing. The impertinent witness easily lays himself open to the classical Gilbertian "Short sharp shock" and invariably gets it.

The child witness often gives a sample of the purest Truth, and when gently handled earns the love and respect of all who hear him or her. (Here my case-book is muttering again).

The time, place and cause of death having been established, the coroner sums up the evidence. This summary must be an accurate condensation of the evidence, with equal weight given to both sides of the story. The credibility of witnesses may be the subject of comment and the law which may have been infringed may be read or stated by the coroner, e.g. a section of the Traffic Act may be quoted. This is also the place where a simplification of the scientific evidence may be appropriate.

Then follows a final injunction of the jury as to their basic duty, viz: to find HOW? WHERE? and BY WHAT MEANS the deceased met death. Here too they should be reminded that the court is a fact finding one and that no person is actually on trial.

The types of death such as accident, suicide, homicide, misadventure and natural causes, are defined for them.

The court then rises and the jury is left to themselves to arrive at a verdict; and the deliberation sometimes takes a considerable time. A good coroner should be aware of a good source of coffee and light refreshments.

In days long gone if the jury could not arrive at a unanimous verdict they were kept without heat, light and food till the verdict was forthcoming. In

England in winter I feel sure that the verdict came forth promptly.

Today a majority verdict is acceptable.

When the verdict is reached the coroner is called, the court is reopened; and the verdict is read to the coroner, who looking at the jury says "so say you all, gentlemen?"

The coroner himself reads the verdict aloud to the court and agrees or disagrees with it, but he cannot in any way change it, because it is the voice of a free people demanding the answers to questions regarding death of one of their fellows.

At this point it is my practice to give the jury a very short talk on the evolution of the coroner's jury, in the pious hope that they will have increased sense of citizenship, or privilege, and of duty well done on behalf of Her Majesty the Queen.

The jury system in spite of criticism by some psychologists continues to have the wholehearted support of the most distinguished jurists, profoundly learned in the law and holding the keenest and discriminating sense of Justice. From my limited experience I agree with the opinion of the high judiciary.

I recall one quaint verdict which lent a fine air of warm humanity to the jury bringing it in. It closed with the words: "We the jury wish to extend our deepest sympathy to the deceased."

Should a recommendation be forthcoming which might in the community interest, be well worthy of implementation, the coroner writes to the Attorney-General adding his comment.

These proceedings often take till midnight for completion and the coroner goes home, perhaps a little tired, but usually content that his work has not been in vain. Another note in the motif of the vox populi has taken its place in the symphony of Humanity.

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Illustrations shown in this article were reproduced from "Sir Bernard Spilsbury, His Life and Cases." Published 1951.

# Editorial

S. Vaisrub, M.D., M.R.C.P. (Lond.), F.R.C.P. (C.), F.A.C.P., Editor

## Traumarama

Versatile and ubiquitous, Trauma is forever with us. We may shut our eyes to the collision across the street, close our ears to the screech of sirens, ignore the screaming headlines, steer clear of Trauma in our daily travels — only to run smack into it on entering our homes long since invaded by televised violence. Here when we see our favorite private eye, knocked down unconscious by a villainous con man, rise undaunted and unfractured to inflict grievous bodily injury on his tormentors, we are forcefully reminded that trauma is inescapable. A detour to disability and a short cut to the final exit, it looms large on the map of life.

Many are the causes of trauma—some preventable, others beyond human control. Unfavorable weather, poor traffic regulation, inadequate road maintenance, incorrect information, faulty mechanics, lax supervision, negligence, violence, incompetence, intoxication, insanity, riots, revolutions, piracy on the high seas are but a few of the environmental and personal factors involved.

Almost every one is concerned with trauma. Police officers, lawyers, engineers, car manufacturers, football players, bull fighters, atomic scientists, tightrope walkers, trapeze fliers, pedestrians, equestrians, sedestrians behind wheels with their accompanying back seat drivers—all are concerned, but none as much as the doctor on whose shoulders rests the responsibility of salvaging the injured and rehabilitating the maimed.

Trauma can be physical, or psychic or a blend of both. Physical injury may cause mental changes, and conversely trauma to the psyche may initiate somatic disturbances. A vicious circle may result wherein it is difficult to sort out causes and effects. Did the hapless inebriate skid into a fence because of the heavy fog, or was his fracture-fraught accident due to befuddlement caused by Demon Drink? Did the young unwed expectant mother ram her car into an innocent telephone pole because her vision was misted by tears of remorse, or was the catastrophe but another manifestation of her "accident proneness" that will eventually land her supine onto the therapeutic couch of the psychiatrist? Such are the unanswerable questions posed by the complexities of psycho-somatic interrelationships.

In the preceding and the current issues of the Review are featured papers on various aspects of trauma as seen and treated by the attending doctor. The lion's share in the presentations belongs to the surgeon, which, of course, is as it should be, for his are the delicate paws which handle the messy business at its messiest. Prominent also is the psychiatrist whose involvement with trauma, though less obviously direct, is both intimate and subtle. In the background looms the physiotherapist, buoyantly cheerful, ever ready to inscribe a happy ending to the sad tale of trauma, while not far behind lurks the coroner to remind us of the ultimate in trauma's tragic aftermath.

Regrettably absent from our Symposium are the specialist in Forensic, Industrial, Military Aviation and Space Medicine, as well as the expert in matters pertaining to Compensation, whose task it is to translate the sequelae of trauma into the language of money. Silent also is the internist — a pity — for who could speak with greater authority on such intricate matters as the relationship of trauma to coronary thrombosis and renal shutdown, or that of syncopal and ictal disorders to safe driving? Perhaps some day these eminent absentees will get together and present us with a worthy addendum to our Symposium On Trauma.

Since our Symposium was masterminded by Dr. D. Parkinson, Chairman of the Joint Committee on Trauma of the Royal College and the American College of Surgeons, it was only natural for us to turn to him for information about the activities of this Committee.

This data, Dr. Parkinson obligingly supplied in the letter, which we have pleasure in publishing on the editorial page. We also take pleasure in thanking the Committee on Trauma, its Chairman and all contributors to the Symposium.

Ed.

## Letters to The Editor

To Editor:

The American College of Surgeons Committee on Trauma was established several years ago for the purpose of studying ways and means to avoid and treat accidental bodily injury. Local and regional Committees were set up in every state and every province with broad and non-specific terms of reference but with the suggestion that traffic officials, law enforcement officials and industrial health officials, when and if available, be incorporated into the Committee. The prime function of these Committees was essentially one of studying existing situations. It is apparent that the Committees have no authority, nor were they ever intended to have any authority to institute regulations in any sphere. Through the central offices of the American College of Surgeons, bulletins are issued at frequent intervals to the various Committees with any new information or suggestions that might apply in the field of Trauma. Booklets and movies are made available such as the motion pictures shown at one of the meetings in Winnipeg recently depicting the activities of the motor car industries as regards safety devices.

More recently the Royal College of Surgeons has created Committees on Trauma and in general these Committees are identical to ones previously established by the American College of Surgeons, although not necessarily so. It was agreed that it would be better to have one Committee in each locality rather than two, inasmuch as their aims and objects were identical. Improvement and standardization wherever possible, of the various Hospital Casualty and Emergency services are among the eventual aims of the Committee on Trauma, but as with all fields of medicine the biggest efforts are directed at seeking means of prevention.

The symposium consists of articles by members of the Committèe and by many more who are not members but who have gladly consented to contribute usually at the suggestion of the Head of the Department concerned, and I would like to personally thank all the authors who have contributed to the symposium.

Dwight Parkinson,
Chairman,
Joint Committee on Trauma of Manitoba,
American College of Surgeons,
Royal College of Surgeons.

February 17th, 1961.

Dear Editor:

Ten years ago under the late Dr. A. T. Mathers, a survey of the incidence of multiple sclerosis in Greater Winnipeg was carried out with the assistance of Dr. Knut Westlund of the Johns Hopkins University School of Public Health and Dr. L. T. Kurland of the National Institutes of Health in the United States. The Winnipeg survey and a similar project in New Orleans have come to be regarded as classic studies in the field of population surveys. The results of the Winnipeg and New Orleans surveys provide the best evidence of a greater prevalence of multiple sclerosis in the temperate zones of North America and have led to intensified laboratory and clinical research to explain the geographic variations which were found. They have also stimulated the development of other epidemiologic projects in many countries.

It has been proposed to undertake a new research program at The University of Manitoba with the co-operation of Dr. Kurland and members of his staff for the following reasons:

1. At the time of the initial studies, Dr. Mathers and Dr. Kurland recognized the possible limitations in the methodology and recommended a re-appraisal of all cases at a later date. Such a re-appraisal offers a unique opportunity to clarify elements in the natural history of multiple sclerosis, to improve still further the methodology of population surveys and to evaluate the accuracy of earlier conclusions on incidence, prevalence and distribution of cases within our city.

2. A resurvey for multiple sclerosis in Winnipeg for the past decade will provide current incidence, prevalence and mortality statistics; comparison of these data with those of the earlier study will help to determine whether or not there has been a real increase in the incidence of this disease.

3. A new effort will be made to compare the Winnipeg multiple sclerosis population with a representative control population in the community to discern any element which predisposes some residents to the disease without apparent reason and to otherwise clarify the etiology of this disease.

For the purpose of collecting the case reports which will be used to measure the frequency indices and other information, two medical record librarians under the supervision of experienced physicians will review and abstract the records of every suspected or diagnosed multiple sclerosis patient who has visited a hospital, clinic or nursing home during the past ten years. Private physicians will be requested to provide brief reports on multiple sclerosis patients. For the patients in the previous survey, the research workers will aim to determine the latest diagnosis, living or dead status, and their present residence. Arrangements for the survey neurologist (who will come to Winnipeg for

an extended stay for this project) to interview and examine the living patients would be made later through their private physicians. As in the previous study, all reports will be handled in strictest confidence and will be utilized for statistical purposes only.

The survey has been endorsed by The University of Manitoba Faculty of Medicine, and we are requesting that it be published in the Manitoba Medical Review to bring it to the attention of all members of the medical profession in the province.

Sincerely yours,
L. G. Bell, M.D.,
Dean, Medical Faculty.

☆

## Winnipeg Medical Society

The Annual Meeting of the Winnipeg Medical Society will be held in the Medical College Auditorium, Emily and Bannatyne, Winnipeg, on Friday, April 21, 1961, at 8.30 p.m.

Presentation of Honorary Life Membership Certificates will be made to Dr. A. M. Goodwin and Dr. M. R. Elliott. Their sponsors will be Dr. Ross Mitchell and Dr. J. T. McDougall.

The new slate of officers will be elected. Nominations will be received from the floor.

The Presidential address will be delivered by Dr. R. L. Cooke.

☆

## Industrial Workshop

# The Society for Crippled Children and Adults

**592 Notre Dame Avenue, Winnipeg**

### OPEN HOUSE

### Wednesday, April 26th, 1961

### 10 a.m. - 4 p.m.

The Workshop for the handicapped is to provide an opportunity for the general public and particularly people who have an interest in Community Service to see what is being done by disabled people in the Workshop.

There are between 50 and 60 people in daily attendance at the Workshop, preparing to go out into business and industry and being helped along the road to complete rehabilitation.

Coffee will be served so that anyone that is real pressed for time may be able to work in the visit during the lunch hour.

# Book Reviews

**Importance of the Vitreous Body in Retinal Surgery with Special Emphasis on Reoperations.** Edited by Charles L. Schepens. Publishers C. V. Mosby, St. Louis, 1960. Price $15.00.

This is a record of the second conference of the Retina Foundation which was held in May 1958. The Retina Foundation is a hospital which was founded by Dr. Charles L. Schepens in Boston. Only retinal diseases are treated in this hospital, and it now has an excellent team of clinicians and basic science research workers. This far-sighted action of Dr. Schepens in founding such a specialized unit is now beginning to bear fruit and valuable information on the aetiology and treatment of retinal detachments is becoming available. Much clinical material is seen at the hospital so that it is possible to subject it to classification and statistical analysis which is really significant.

To this conference were invited numerous ophthalmologists with a special interest in retinal detachment surgery from Germany, Italy and numerous centres in the United States. The record of the conference is divided into five parts.

In the first part two well-known workers from the Armed Forces Institute of Pathology, Washington, present new studies showing that there is an intimate union of the outer layers of the vitreous and the internal limiting membrane of the retina. Then follows a detailed resumé of present knowledge of the physiology of the vitreous with much interesting discussion.

The opening paper in part two describes the pathological findings in a number of eyes removed after unsuccessful operations for retinal detachment. These studies reveal the complications which caused surgical failures. The next paper by Dr. K. Hruby of Graz, Austria on changes in the vitreous associated with retinal detachments is very valuable. It is followed by a paper by Dr. Schepens in which he describes and classifies four types of retinal detachments and emphasizes the danger of making fresh retinal holes during the operation for replacement.

Part three begins with a paper by Dr. Shafer in which he describes his technique of vitreous implantation to force the retina back into apposition with the choroid. There is much discussion upon its mode of action and the dangers of this procedure. Dr. Dohrmann K. Pischel then describes his method of scleral resection, and it is followed by vigorous discussion from the floor.

The fourth part deals entirely with the scleral buckling procedures. Dr. Custodis of Dusseldorf, Germany opens with a description of his very simple method of buckling the sclera by applying mattress sutures and putting a polyviol implant in the fold to thrust it into the vitreous cavity.

The release of all subretinal fluid has always been considered essential for successful results in retinal surgery. However, in this section it is suggested that the rise in intraocular pressure caused either by buckling or by a simple girdle suture around the equator of the eye causes the absorption of subretinal fluid. Dr. Custodis states that he never releases the fluid, yet he claims a percentage of operative cures which compare favourably with the best of other published results. If his claim can be substantiated by other workers, this step in retinal surgery may be discarded. Dr. I. D. Okamura then describes the recommended procedures of the Retinal Foundation group.

The final section is a review by Dr. C. L. Schepens. He speaks with the authority of a master and makes a brief and most apposite comment on the conference.

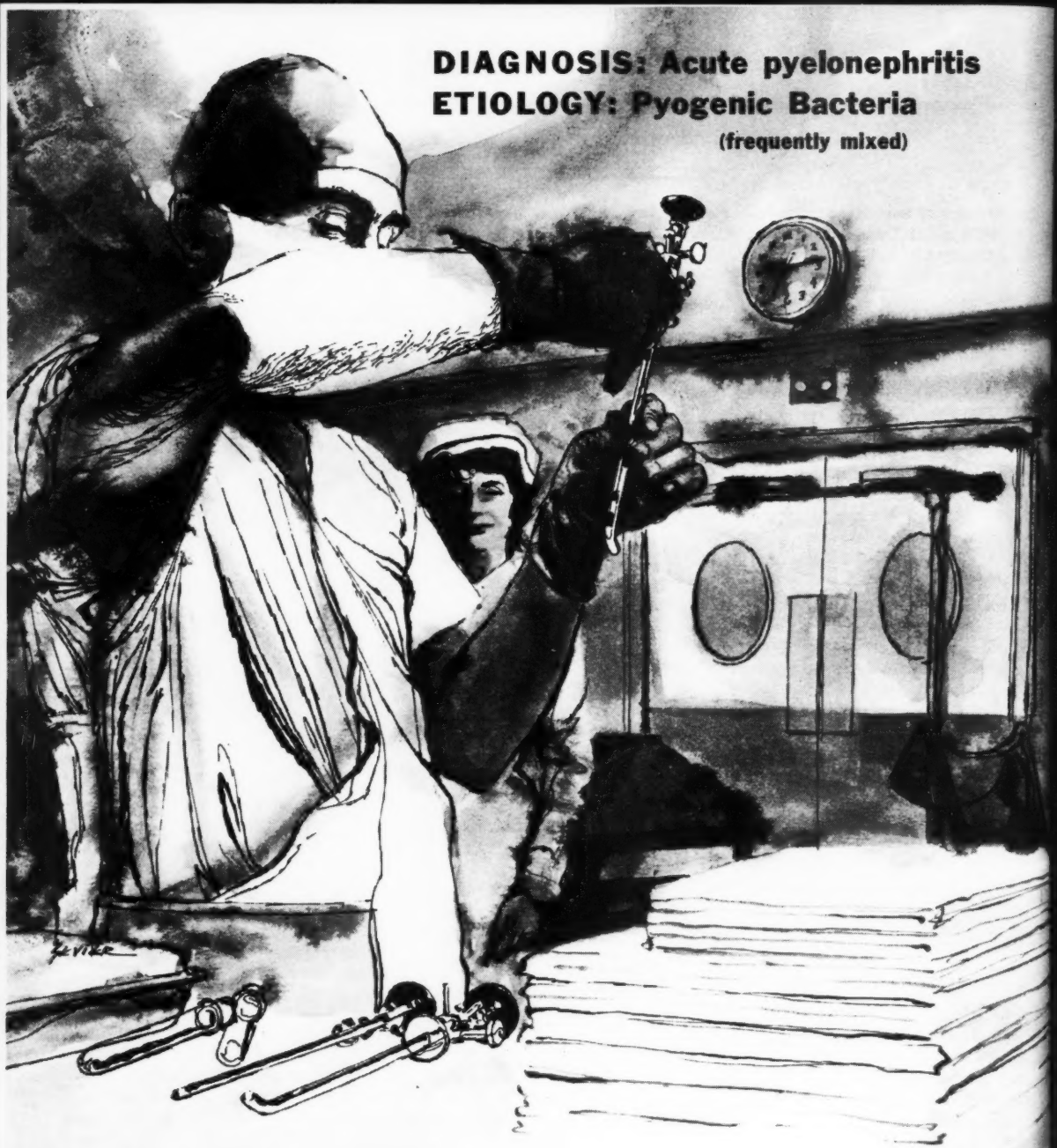
I wish to make a protest against the growing tendency to hold such conferences as this and to publish reports upon them in expensive book form without adequate editing. Some become a permanent record of uninspired mediocre chat in which one seeks in vain for pearls of wisdom. The lack of orderliness in presentation is often aggravated by a poor index. The usefulness of the present book is limited by an inadequate index. Several points which I read and later wished to look up in the text were not given, e.g. the discussion on the drainage of the subretinal fluid. Nevertheless, this is a good book, much better than most records of conferences, and I recommend it to all ophthalmologists who wish to read a review of recent thought and progress in retinal detachment surgery. I am glad that as a reviewer I have been compelled to read it with more than average attention.

Howard Reed.



**Light Coagulation.** Gerd Meyer-Schwickerath. The C. V. Mosby Co., 1960, St. Louis. Price $9.50.

Following the observation of a number of patients who suffered from retinal burns through watching the solar eclipse of July 10th, 1945 without protection, Meyer-Schwickerath conceived the idea of making use of intense light irradiation for therapeutic purposes. There followed four years of experimentation, of mixed doubt and encouragement before the first instrument suitable for clinical use was produced. Problems of the light source, optical system, intensity and times of exposure had to be studied in numerous animal experiments. The effects of varying doses of radiation were studied histologically in innumerable rabbit eyes. Eventually as a result of much trial and error Zeiss produced the machine called the light coagulator.




**THERAPEUTIC NEEDS:** Rapid suppression of causative organisms and attention to fluid balance and urinary output.

**ANTIBIOTIC OF CHOICE:** DECLOMYCIN®* because it is highly effective against the common pathogens in G. U. infections, notably E. coli, and at the same time is effective against some of the less common or more resistant organisms.

*DEMETHYLCHLORTETRACYCLINE LEDERLE

Lederle CYANAMID OF CANADA LIMITED, *Montreal*

This represents a new and brilliant departure in ophthalmology.

In this monograph Meyer-Schwickerath has recorded his experience of light coagulation. In the first half of the book he briefly describes the development of knowledge of solar retinal burns and the results of his experiments. It is interesting to learn that eclipse blindness was known to Socrates, yet more than two thousand years elapsed before this knowledge was put to a therapeutic use. He then describes the construction of the instrument, its mode of use and the examination and preparation of the patient.

The second half of the book deals with the clinical indications for the use of the instrument. This is based on his own extraordinarily wide experience of several thousand cases.

It is well known that in about twenty percent of cases of retinal detachment the second eye suffers a detachment at a later date. The visual results of surgical treatment of a retinal detachment often leave much to be desired. Hence it is most discouraging to see in the second eye of a patient with retinal detachment, some equatorial or peripheral retinal degeneration which is so often the forerunner of a detachment. In the past it has been common practice to treat such an area with diathermy, but enthusiasm for this procedure has waned because it sometimes hastened the development of a detachment instead of preventing it. In light coagulation it seems that the therapeutic answer has been found. Meyer-Schwickerath records 465 cases with only eight failures.

Throughout the book he emphasizes that this method of treatment is of no value if there is a moderate quantity of fluid between the detached retina and the choroid. However, in fifteen per cent of cases in which retinal detachment has been present less than four weeks, two or three days of bed rest will cause the retina to go back into place sufficiently for light coagulation to cause it to adhere to the choroid.

Periphlebitis retinae (Eales' disease) has always been a source of controversy as regards both aetiology and treatment. For a long time it was considered to be a tuberculous manifestation and was treated by tuberculin desensitization. Few ophthalmologists accept this concept any longer, and the treatment of the condition has remained unsatisfactory. The author has treated 112 cases with light coagulation and achieved a sixty-five per cent cure, but he is careful to point out that the period of follow up in some of these cases is limited.

Angiomatosis retinae (von Hippel Lindau disease) is a disease which has responded fairly well to diathermy but it seems that light coagulation is a more effective remedy. The author has treated twenty-six such cases with very satisfactory results.

This method of treatment also offers hope of destroying small malignant melanomata of the choroid. At the time of writing the monograph twenty-four such tumours had been destroyed and no recurrences or deaths had occurred in a follow up ranging from six and one half years to three and one half years. This is of great importance when the growth is present in an only eye. If it occurs in a binocular patient it is still probably wiser to remove the affected eye. If, however, further studies confirm that photocoagulation does destroy malignant melanomata of the choroid, this method of treatment will be a great addition to our therapeutic armamentarium against this dread disease.

Meyer-Schwickerath is attempting to assess the value of photocoagulation in retinoblastoma. Although he has treated more than twenty cases he modestly states that his studies are still in their infancy and that further experience and follow up are required before an adequate assessment is possible. The results which he has reported, however, suggest that small retinoblastomata may succumb to photocoagulation.

Two other interesting indications for this treatment are mentioned. When the pupil is updrawn following injury or operation, a new pupil may be formed by burning a hole in the iris or membrane. Skin tumours around the lids such as haemangiomata, naevi and xanthelasma respond satisfactorily to photocoagulation. Two limbal neoplasms and three cases of deep corneal vascularization have also responded satisfactorily to this treatment.

No review of this book would be adequate without special mention of the translator. Dr. Stephen M. Drance is Associate Professor of Ophthalmology of the University of Saskatchewan in Saskatoon. He is to be congratulated for making this important monograph available in English and for the excellent performance of this task of translation. Dr. Drance has had considerable experience with the photocoagulator in his own centre in Saskatoon. To those lacking an adequate knowledge of German he has succeeded in giving an invaluable guide to the use of this instrument. All English reading ophthalmologists owe him their gratitude.

Howard Reed.

**Antibiotics and Sulphonamides in Ophthalmology.** Arnold Sorsby and Joseph Unger. Pub. Oxford University Press, Toronto 1960. Price $2.00.

Medicine is advancing so rapidly that it is difficult for the specialist in any field to keep up to date with recent developments. To help the specialist to keep informed there are innumerable abstracting services and review articles. In addition, books are published at times reviewing current developments. The book under review is of this nature. In the last 20 years advances in sulphonamide and antibiotic therapy have revolutionized the treatment of infections of the eye. This book

presents a readable summary of the research in this field and indicates the difficulties and problems still unsolved.

The book is composed of three parts. The first section deals with the principles of the use of sulphonamides and antibiotics in ophthalmology. Much practical information regarding the use of drops, ointments and subconjunctival injections is given and the problems of resistance and sensitivity are discussed. In part two the nature of the various sulphonamides and antibiotics is described. Their absorption and excretion, toxic effects, antibacterial spectrum, dosage and modes of administration are presented clearly and precisely. The last section is especially useful. All the important ocular and extraocular infections are discussed in turn and in each case the drug of choice, its dosage and best mode of administration are given in detail. This is a valuable hand book which every ophthalmologist will find instructive to read and handy for reference. It contains so much information and wisdom for so small a price. It is most heartily recommended.

Not only are the authors to be congratulated on a concise presentation of their subject, the publishers also deserve high praise. Reviews of this nature are of passing value only. In a few years they are obsolete and new reviews supersede them. Recognizing this, the Oxford University Press has issued this book as a paper back at the low price of two dollars. This compares very favorably with the price of other books of similar content published with hard covers.

I hope that this lead given by the Oxford University Press will be followed by other publishers and that more current reviews will be issued in paper backs.

Howard Reed.

**Textbook of Otolaryngology.** Published by C. V. Mosby Co. Ltd., 1960. Price $8.75.

A recent text book of Otolaryngology edited by David DeWeese, Professor of Otolaryngology, University of Oregon and William H. Saunders, Associate Professor of Otology, The Ohio State University College of Medicine, Columbus, Ohio, deserves the attention of the undergraduate student as well as the general practitioner.

In these days of specialization, it is difficult for practitioners, teachers or editors not to bias opinions regarding medical practice in a disproportionate fashion. Perhaps the outstanding feature of this fine text book is the nice balance between anatomy, physiology, physical diagnosis and concise well-written descriptions of disease and the accepted treatment.

The first forty pages deal with the physical examination of the ear, nose and throat. This portion, as well as the rest of the text, are exceptionally well illustrated with photographs and line drawings and should prove most acceptable to the student.

A text is only as good as its index. The index in this book is quite adequate. The end of each chapter does not contain an extensive bibliography but rather advice on selected readings where more detailed explanations are available. The authors for the most part have concentrated "the selected readings" to more recent journals and texts but have not overlooked reference to the classic descriptions and writings of the authors of another generation.

This is an extremely well-written text, clear and lucid. The photographs and line drawings are excellent. The authors have produced a worthwhile, adequate text of modern Otolaryngology and the book is highly recommended to the undergraduate and general practitioner alike. W. A.

## Markle Fund Grants

Twenty-five young medical scientists, all faculty members of medical schools in the United States and Canada, have been appointed Markle Scholars in Medical Science by the John and Mary R. Markle Foundation of New York. For the first time since 1948, when these annual appointments were begun, a woman physician has been selected. She is Dr. Mary Ellen Avery, assistant professor of pediatrics at Johns Hopkins University School of Medicine. To date, over 300 teachers and investigators in 78 medical schools have been assisted by the program through appropriations of over $9,000,000 John M. Russell, president of the fund announced.

The purpose of the program is to help relieve the faculty shortage in medical schools by giving young teachers and investigators academic security and financial assistance early in their careers. Appropriations totalling $750,000 have been made to the 25 schools where the Scholars whose grants begin July 1, 1961, will work. Each school will receive $30,000, at the rate of $6,000 a year for the next five years, toward support of the Scholar and his research.

Medical schools nominated 57 candidates for the grants this year. Five selection committees composed of educators and men in other professions helped the fund to choose the 25 whose appointments are announced.

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The foundation was established in 1927 by the late John Markle, Pennsylvania coal operator, "to promote the advancement and diffusion of knowledge . . . and the general good of mankind." The Scholars in Medical Science program is now the chief interest of the fund.

# Questions and Answers Page

In order to keep the medical profession informed as fully as possible in all matters relating to Association business, medical economics and prepaid medical care, this page welcomes questions pertaining to these fields.

**This month we have a question.**

**Why, during the past 10 months have we received only one question from our 950 members?**

**We don't have the answer, do you?**

# Association Page

**Prescriptions — Proprietory or Generic**

The cost of drugs and the prescribing of them has been local front page news for some time. This has now been brought into sharp focus by a recent communication from the Minister of Health and Welfare, informing the Association that notwithstanding previous requests that prescriptions under "Medicare" be written to utilize generic rather than proprietory drugs, only a relatively small proportion of the prescriptions being developed in Greater Winnipeg and the province at large respect previous requests that generic names be used.

This should be a matter of concern to each practitioner and it would be most unfortunate if the Minister was forced by lack of co-operation to refuse to pay for proprietory prescriptions.

The M.M.A. Pharmacy Committee has been in close touch with the problem and their observations are that many prescriptions are being written for products not listed in the Medicare formulary although in almost all cases equivalent or satisfactory alternatives are included. In addition, trade names of drugs rather than the generic names are used on the prescriptions.

The Committee's review of Medicare prescriptions indicates that the use of appropriate generic names should not impose any unreasonable burden on practising physicians. The Committee finds that very few physicians have prescribed more than 10 different drugs to Medicare patients and a majority have utilized only three or four.

It is the Pharmacy Committee's opinion that the present basic plan for the provision of drugs to Medicare patients is sound.

They point out that the formulary accepted by the Association contains a provision for modification or recommendation by physicians. No recommendations or requests for alterations have been received by the Pharmacy Committee during the eight months operation of the program.

It is hoped that members of the Association will take recognition of the Minister's request concerning prescriptions under the provisions of the Medicare formulary.

**Survey**

We understand that the Alberta Division is seriously considering a survey of their Province to determine the number of people that are presently not insured by that Province's pre-paid plans.

British Columbia is now in the midst of such a survey and we will be interested to hear the results.

A Market Opinion Research survey was done in Winnipeg approximately two years ago concerning M.M.S. coverage. This information has been forwarded to the Alberta Division and it was felt that they might also be interested in the expected report from the Economist retained by the M.M.A. to establish income levels to be used as a guide in determining persons who may need assistance in providing for the payment of medical services.

**Nominee**

The Executive Committee recently appointed Dr. R. W. Richardson, Nominee to the C.M.A. Executive for the term 1961-62. Dr. Richardson has been representing this Division on the C.M.A. Executive since 1950.

**Civil Disaster**

The major aim of the Civil Disaster Committee is to integrate medical facilities into an overall program in order that services may be utilized to the best advantage at the time of need.

Courses in Civil Defense are conducted regularly at Arnprior, Ont. Medical personnel representing Victoria and Misericordia Hospitals are attending the course in April and the Committee wishes to have other Metropolitan Hospitals send representatives to future courses.

Members interested in a Civil Defense Course at Arnprior should contact the Association office.

**Royal Commission on Health Services**

At a recent meeting of the Executive, Dr. K. R. Trueman was appointed Chairman of the M.M.A. committee to develop a brief for the Royal Commission. The choice of committee members has been left with the Chairman.

The Commission's terms of reference have not been announced but it is expected that they will be available shortly.

Further information will be forthcoming at such time as the Committee is informed of the terms of reference and establishes its lines of communication.

**Nickerson-Kveim Antigen**

The following letter from the Director of the Department of Bacteriology, Winnipeg General Hospital, is reprinted for information. You are asked to assist in any way possible.

*February 13, 1961.*

*The Secretary,*
*Manitoba Medical Association,*
*601 - 404 Graham Avenue,*
*Winnipeg 1, Manitoba.*

**Nickerson-Kveim Antigen**

*We have prepared this antigen for the diagnosis of Boeck's sarcoidosis and have made it available to any*

*medical practitioner who wished to use it. As you probably know this antigen is made from human tissue. Usually and preferably a lymph node from a patient with sarcoidosis is used.*

*In order to obtain tissue for the antigen, we either have to obtain a volunteer with known sarcoidosis and ask an interested surgeon to remove a node or we have to make our requirements known to surgeons operating on patients with a certain or almost certain diagnosis of sarcoidosis and ask them to obtain tissue for us. The tissue must not be put in formalin or other preservatives and therefore it is collected by us immediately after removal.*

*Since we are willing to make our antigen available to anyone in Manitoba we are seeking your assistance in obtaining some sarcoid tissue at this time since we have run out of our present stock of antigen.*

*We would be very grateful if you could help us in this.*

*Yours faithfully,*
*Peter Warner, M.D., Ph.D.,*
*Director, Department of Bacteriology.*

**Any Change?**

The Department of Medical Economics, C.M.A., has asked the Association if there have been any "changes of the pattern of medical practice since the advent of M.H.S.P.".

The following members of the Hospital Relations Committee have been asked for their written comments on the subject:

Dr. E. D. Hudson, Hamiota:
in respect to rural practice.

Dr. K. I. Johnson, Pine Falls:
in respect to rural practice.

Dr. R. O. Flett, Winnipeg
in respect to urban practice.

Dr. R. Lyons, Winnipeg:
in respect to specialty practice.

These members would certainly welcome your comments on the subject. Please reply through the Association office.

**Hospital Relations**

The Associated Hospitals of Manitoba asked the Association to name a representative to a special committee to study medical records systems for rural hospitals.

According to the A. H. of M. many smaller hospitals have asked for assistance and a general review of their medical records program indicates that much help can be given by instruction in the best methods of compiling and maintaining records.

The Hospital Relations Committee's recommendation that M.M.A. participate was approved by the Executive and Dr. J. C. Menzies of Morden has accepted the appointment. The Committee is representative of A.H. of M., M.H.S.P. and M.M.A.

**Group Life Insurance**

The Travelers Insurance Co. inform us that they completed the canvass of those who were members of the original Travelers' group and have enrolled the required number to initiate the new formula effective March 1, 1961.

The new coverage formula was outlined in the January issue of the "Review."

**Appreciation**

It was with much pleasure that the Executive of the Association unanimously agreed that Mr. Morris Neaman, on the occasion of his retirement from the M.M.S. Board, be presented with a M.M.A. Certificate of Merit in appreciation of his contribution to the Manitoba Medical Service.

**New Affiliate of C.M.A.**

Advice recently received from the C.M.A. indicates that Dr. J. R. MacDougall, Chairman of the newly formed Medical Section of the Canadian Pharmaceutical Manufacturers Association has asked if representatives from the Section could meet with Provincial Divisions of C.M.A.

Dr. MacDougall feels that discussions would be worthwhile to determine whether or not a problem exists in today's drug marketing, and to endeavor to delineate exactly what facets of pharmaceutical promotional practices warrant criticism.

This Division is certainly favorably inclined to discuss such matters with Dr. MacDougall or his representative, and if any members of the M.M.A. have suggestions for discussion, they are invited to submit them to the M.M.A. office.

**Re-Appointment**

Notice has been received from the Minister of Health and Public Welfare that Dr. C. H. A. Walton has been re-appointed for a further term of three years as the M.M.A. representative to the Advisory Commission, Health Services Act.

**New Health Unit**

Dr. D. Hall, formerly of the Portage la Prairie Health Unit is now Medical Director of the Birtle-Shoal Lake Health Unit which opened March 1st, 1961. The headquarters of the unit is in the new Birtle Hospital.

The Health Unit will serve many of the Municipalities, Towns and Villages surrounding Birtle Hospital.

**Information of Interest from M.H.S.P.**

**Diet Manual**

An advisory Committee, comprised of the Nutrition Committee of the M.M.A. and Representatives of the Dietetic Association of Manitoba, has cooperated with the Division of Hospital Standards, Manitoba Hospital Services Plan in the compilation of a Diet Manual. This Diet Manual has been written in response to requests for assistance with

modified diets which have been received from some smaller hospitals in Manitoba.

It is planned to distribute copies of this Diet Manual to Manitoba Hospitals without the services of a Registered Dietitian and to Doctors attending at these hospitals.

Copies of individual diets from this Manual will be available in quantity for use by hospitals and doctors.

Any members of the M.M.A. who have not received a copy of this Diet Manual may receive one upon request to the Manitoba Hospital Services Plan — Division of Hospital Standards.

R.P.H.S.

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## Brandon and District Medical Society

A meeting of the Brandon and District Medical Society was held in the Nurses' Residence, General Hospital, Brandon, on Wednesday, March 1st, 1961.

Approximately 37 members were in attendance from Brandon, Boissevain, Killarney, Melita, Minnedosa, Neepawa, Oak Lake, Oak River, Rivers and Winnipeg.

The Scientific Program was divided into two portions: "The Function and Organization of Tissue Committees" by Drs. P. L'Heureux and D. W. Penner, Winnipeg; "The Law relating to the use of Human Tissues by Medical Science," by Professors R. D. Gibson and C. H. Edwards, Faculty of Law, University of Manitoba, Winnipeg. Lively discussion followed each presentation.

At the brief business session which followed there was a review of special meetings of the Society and Executive Committee to discuss the Medicare Brief, and the draft copy of Proposed Hospital Regulations.

A resolution was proposed by Dr. F. J. E. Purdie, seconded by Dr. J. M. Matheson, That an Area Tissue Committee be formed, composed of two representatives from Northwestern District, two representatives from Brandon and District, residing outside Brandon, and one representative from Brandon and District residing in Brandon. The Area Tissue Committee would deal with tissues from hospitals other than the Brandon General Hospital which would continue as at present.

Since there was insufficient time for discussion, action on the resolution was deferred until Saturday, March 18th, when a special meeting of the District will be convened.

During the afternoon wives of members were entertained at the home of Mrs. J. Scott when Kaye Rowe of the Brandon Sun talked on spring fashions.

A reception and dinner were held at the Prince Edward Hotel when head table guests were introduced. Dr. H. S. Evans announced the second Manitoba Conference on Education on Saturday, March 11th. Dr. M. T. Macfarland brought greetings from the Manitoba Medical Association.

M.T.M.

## Southern District Medical Society

A meeting of the Southern District Medical Society was held at the Shamrock Inn, Carman, on Thursday, March 2nd, 1961.

Present were— Carman: Drs. E. K. Cunningham, President and W. H. C. North, Secretary-Treasurer; Altona: Drs. S. S. Toni and J. K. Mohamed; St. Claude: Dr. F. A. Champagne; Gretna: Dr. J. P. Boreskie; Morden: Drs. M. M. Colert, J. C. Menzies, C. J. Unruh; Winkler: Dr. B. J. Froese, H. U. Penner, C. W. Wiebe; Winnipeg: Drs. D. F. Besant, A. R. Downs, P. L'Heureux, M. T. Macfarland.

The Scientific Program consisted of two papers: Dr. A. R. Downs spoke on Peripheral Vascular Disease. The paper was illustrated by slides and X-ray plates.

Dr. D. F. Besant presented several recent interesting paediatric cases illustrated by X-ray findings.

Drs. P. L'Heureux and M. T. Macfarland answered questions relating to Tissue Committees. Formation of Area Committee No. 2 was agreed at a meeting of the Central-Southern Districts at Portage la Prairie on January 18th.

Other items of Association business, Medicare brief, M.H.S.P., Royal Commission on Health Services, Liaison with Associated Hospitals of Manitoba, W.C.B. fees, etc., were discussed briefly by the Executive Director.

Following the business session members enjoyed a chicken dinner. A vote of thanks was expressed by Dr. Boreskie.

M.T.M.

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## Northern District Medical Society

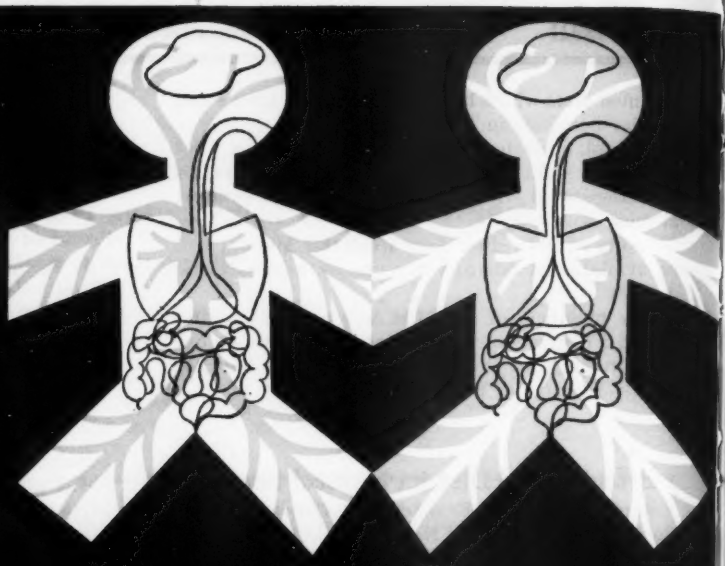
A meeting of the Northern District Medical Society was held at Dauphin on Sunday, March 5th, 1961.

The morning session consisted of presentation by members of attending staff of six private cases at the General Hospital. Five cases were in the age range of 64 to 76 and presented interesting clinical problems, while one was younger.

Lunch was served at the Club Room, Towers Hotel.

The afternoon session was held in the Lecture Room of the Health Unit. Present were: Drs. B. E. Symchych, President; M. Potoski, Secretary; M. K. Brandt, R. E. Dicks, T. K. Kolkind, W. L. Marshall and L. J. Stephen from Dauphin; H. L. McNicol, Flin Flon; T. Kinash, Gilbert Plains; P. W. Hopper, Grandview; A. R. Dick, McCreary; A. F. Ferre, Roblin; R. L. Gendreau, Ste. Rose; J. L. Honig, L. V. Jonat and T. F. Malcolm from Swan River; M. T. Macfarland and R. T. Ross from Winnipeg.

The main scientific speaker was Dr. R. T. Ross, Winnipeg, who described findings in a study of 21 cases of Carotid Artery Disease. The paper was illustrated by slides and X-ray plates.



# high antibiotic concentrations at the site of infection with Cosa-Terramycin

## largest distribution volume

Of the four tetracycline analogues "oxytetracycline was found to have the largest distribution volume."[1]

## high concentrations at the site of infection

"The local concentration is particularly important in the therapeutic value of antibiotic treatment. In this connection, the concentration of the antibiotic in the tissue locally is far more important than its concentration in the plasma."[2]

## few side effects

"An analysis of records of bowel action of 288 patients treated with tetracyclines (including Terramycin) does not confirm that any of them is more or less liable to cause diarrhea than the others."[3]

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**references:**


1. Kunin, Dornbusch and Maxwell Finland Journal of Clinical Investigation, November 1959.
2. Spitzy and Hitzenberger Antibiotics Annual, 1957-1958.
3. Garrod and Waterworth Antibiotics Annual, 1959-1960.

The minutes of previous meeting in October, 1960, were approved, as were those of January 15th, 1961, which was called to consider a brief concerning medical education as the result of provision of medical and surgical services to recipients of Social Allowances.

Drs. H. L. McNicol, President, and M. T. Macfarland, Executive Director, discussed various aspects of Association business, including "Medicare," and in the unavoidable absence of Drs. P. L'Heureux and D. W. Penner, provided information concerning the formation and operation of Area Tissue Committees.

A ballot for selection of members to the Area Tissue Committee No. 4 had been circulated and resulted in selection of five members as follows: Chairman, Dr. B. E. Symchych, Dauphin; Members: L. V. Jonat, Swan River; P. W. Hopper, Grandview; A. R. Dick, McCreary; M. K. Brandt, Dauphin.

Dr. T. F. Malcolm, Swan River Health Unit Director, gave the results of pre-natal and confinement study in Camperville and Duck Bay areas which were instructive, and indicated the need for greater public education of existing facilities.

It was agreed that Sunday meetings should be continued and May 28th, 1961, was selected as the time of the next meeting at Swan River.

Following the meeting members were entertained at the home of Dr. M. Potoski.

M.T.M.

# Obituaries

### Dr. Gregory Novak

Dr. Gregory Novak, 73, died at his home in Winnipeg March 6th. Born in the Western Ukraine he came to Canada with parents and family 53 years ago and settled in Saskatchewan. He taught school in Saskatchewan and Alberta and took his pre-medical training in the University of Alberta before proceding to McGill where in 1919 he was first Ukrainian in Canada to graduate from that university. He practised in Winnipeg for forty-one years, was attending physician to many Ukrainian organizations and was active in the Red Cross Society. He is survived by his wife, a son, four daughters and eight grandchildren.

☆

### Dr. John Boyle Ritchie

Manitoba friends of Dr. John Boyle Ritchie of Regina will regret his passing on January 31st at the age of 74. A graduate of Manitoba Medical College in 1916, he served overseas, then practised in Regina as a surgeon and headed a large clinic. In 1947 he became a Fellow of the American College of Surgeons and later the University of Saskatchewan granted him an honorary degree (LL.D.). He served on the attending staff of Regina General Hospital and Regina Grey Nuns Hospital. As Chairman of the Committee on Archives of the Canadian Medical Association he presented a report at Banff in June 1960 and donated some sixty biographies of early doctors connected with the North West Mounted Police. These had been approved by the Commissioner and are of value in throwing light on early medical practice in the Canadian West. In November 1958 he gave an address before the Medical History section of the Winnipeg Medical Society on that subject.

☆

### Dr. William Harpur Willson

Dr. William Harpur Willson, 88, died in Deer Lodge Hospital on February 12, after a protracted illness. Born in St. Catherines, he came to Winnipeg as a boy, was educated in the public schools and at Royal Military College in Kingston. He graduated from Manitoba Medical College in 1898, worked for the Canadian Pacific Railway during the building of the Crow's Nest Pass line, practised for a time in Nelson, B.C. and served overseas during the First World War. On his return he practised in Winnipeg. He is survived by three sons, one of whom, Dr. Glenn Willson, practises in Flin Flon, Man.

☆

### Dr. William Cuthbert Handford

Dr. William Cuthbert Handford, 64, died in Grace Hospital March 7th after a long illness. Born at Holmfield, Manitoba, he was educated in Winnipeg and graduated from the Faculty of Medicine, University of Manitoba in 1926. For thirty-four years he practised in Winnipeg. During the first World War he served with the 10th Canadian Field Ambulance, later was a member of the Valour Road Legion. He is survived by his wife, a son Dr. Robert Gerald Handford, a daughter and seven grandchildren.

# HOSPITAL MEETINGS

| Hospital | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| Children's | 12:00 Surgical Rounds | 10:00 Staff Rounds "B" Service<br>12:00 Postgraduate Seminars | 9:30 Staff Rounds "C" Service<br>11:00 Clinical Path. Conference | 11:00 Grand Ward Rounds | 10:00 Staff Rounds "A" Service | 9:00 Newborn Conference |
| Deer Lodge | Clinical Luncheon (1st Monday) | | | 11:00 Ward Rounds | | |
| Grace | 12:00-2:00 p.m. Weekly Seminar | Clinical Luncheon (3rd Tuesday) | | 12:00-2:00 p.m. Weekly Seminar | | |
| Misericordia | | 2. Clinical Luncheon | | | | |
| Municipal | | | 7:30 p.m. Review of Deaths (2nd Wednesday) | | | 8:30 Clinical Staff Conf. and Ward Rounds |
| St. Boniface | 11:00 Paediatric Rounds | 11:00 Surgical Rounds | 11:00 Grand Rounds<br>11:00 Cardio-Pulmonary Conf. (2nd Wednesday) | 8:00 Orthopedic Rounds<br>11:00 Tumor Clinic<br>11:00 Obstetrical Rounds<br>12.00 Clinical Luncheon (2nd & 4th Thurs. | 11:00 Medical Rounds<br>11:00 Cardio-Pulmonary Conf. (4th Friday) | |
| St. Boniface Sanatorium | | 12:30 Clinical Luncheon (2nd Tuesday) | | | | |
| Victoria | | Tissue Committee (1st Tuesday) | | | 3. Clinical Luncheon<br>4. Active Med. Staff | |
| Winnipeg General | | 11-12:00 Medical Ward Rounds | 9-10:00 Tumor Clinic<br>11:30-12:30 Chest Conference | 12:15 Clin. Lunch. (1st & 3rd Thurs.) | 11:30-12:30 Neurological Conference<br>4:00-5:00 Surgical & Service Rounds | 10:00 Surgical Conference<br>11:00 O.P.D. Conference<br>11:00 Obstetrics & Gynaecology Conference |
| Brandon General | | | Medical Staff Lunch (Wed. prior to 2nd Tues. each month) | | | 10:00-noon Clinical Drs. from S.W. Manitoba invited (Nov. to May) |

# Social News

Reported by K. Borthwick-Leslie, M.D.

Quote from Vancouver: "The family doctor is making a "comeback" and emerging from the shadow of more impressively titled and higher paid medical specialists. A crying need for more and more General Practitioners in the U.S.A. is admitted."

This statement is the opinion of the past president of the College of General Practice in Canada and also the president of the American Academy of General Practice.

Here in Winnipeg, with the possible paucity of teaching material for our medical students, the co-operation of the General Practitioner is asked as to referring patients to the teaching departments of the hospitals, and even, yea even take an active part in the treatment of these cases.

Does the dawn break?

In the meantime fellow G.P.s, how come that of 8,500 in Canada only 2,100 of us are members of the College of General Practice? Rather a poor showing of unity and interest in our future, is it not?

☆

Two Manitobans are to be congratulated on winning awards of $500.00 towards post graduate studies. The Upjohn award goes to Dr. Glenn N. Willson, Flin Flon, Man., the Schering Corp. Ltd. one to Dr. H. A. Lundar of Winnipeg.

☆

On February 9, 1961, a Testimonial dinner was held to the Championship Intercollegiate Team of McGill who won the Championship in 1960. Dr. A. G. Meindl was honoured as being a member of the first team to win in 1902.

☆

The St. Boniface Clinic announce the appointment to its Medical Staff of Dr. Richard A. Lim—General and Thoracic Surgery and Dr. Patricia A. Hutchison in Pediatrics—Address, 343 Tache Ave., St. Boniface, Man.

☆

The Mall Medical Group announce the association of Dr. Phillip H. Barnes in the practice of Obstetrics and Gynecology.

Welcome to the battle of the "public" Dr. Barnes and good luck.

☆

Martin L. Weidman, M.D. announces the opening of his office in the practice of Pediatrics at 514 Boyd Bldg. in association with Dr. F. J. Coodin.

☆

Dr. H. Sirkis is welcomed to 132 Medical Arts, part time basis. Probably get hooked for my house calls, especially at night. Good luck in your move into civilization? ?

Dr. and Mrs. D. F. Coffey left Good Friday for London, England — via New York — a last fling in North America before settling down to the serious matter of practicing medicine in England.

Some of the intimate friends here suggest that a missionary spirit prompts the move back to the old country, a desire to reform and improve the status of the "bookies." The best of luck Dr. Coffey, in all your projects, serious and otherwise. We will miss you.

☆

Congratulations to Dr. and Mrs. Harry Medovy who are justly proud of their daughter Nancy, who has been awarded the Alpha Delta Pi award as the outstanding woman graduate of the U. of M. this year.

The award went to the honor student in psychology in recognition of her academic standing during the four years of study (over 72% average) and also for her active participation in extra curricular activities. Nancy plans on a year post graduate study in business administration at Harvard University.

☆

Dr. and Mrs. Bauman announce the birth, March 22nd, of Michael John—brother for Kenny.

☆

Dr. and Mrs. D. G. Irving, Crystal City, Man., March 18th welcomed Steven John, baby brother for Barbara, Kathy and Dick. Congratulations.

☆

Dr. and Mrs. J. Greene happily announce the arrival of their daughter Deidre Lee, on March 18.

☆

That's a mighty cute picture of Susan Shorthill, daughter of Dr. and Mrs. W. Shorthill, Winnipeg, featured in the new Star Weekly. Susan is modeling a beautiful Indian-made tam and sweater outfit while holidaying in Victoria, B.C.

☆

Sorry boys, but after checking over all those stories told me at a recent **very** good cocktail party, I had to decide that in spite of your good intentions toward my column, discretion is the better part of valour. Thanks anyway.

## Heart Research

A new era in heart research is starting at the University of Saskatchewan in Saskatoon.

The heart rate of athletes during violent exercise has been monitored through use of small equipment worn by the athletes. The next step is to develop equipment that can be worn by heart patients to enable their daily routine to be checked by their doctor.

The projects are under the direction of Dr. J. E. Merriman, assistant professor of medicine and director of the Cardio-Pulmonary Laboratory at the University Hospital. Co-operating are B. A. Holmlund and R. Cobbold of the College of Engineering and Dr. W. A. R. Orban and Dr. Don Bailey of the School of Physical Education.

In experiments held already, an athlete has carried equipment on a belt with electrodes fastened on his skin near his heart. The equipment consists of a miniature radio transmitter, electrocardiographic amplifier and batteries. It records some of the electrical impulses of the heart — not as many as the standard electrocardiogram that is taken in a hospital or doctor's office, but sufficient to give a record of the heart rate.

The significant part of the experiments has been that the signals have been relayed over distances of up to one mile to a conveniently-located receiver where they were tape-recorded. Later, the recordings were analysed.

Adapting the technique to everyday situations for heart patients will necessitate some changes to the equipment so that more information can be transmitted over longer distances. In other words, so that a complete electrocardiogram can be taken and transmitted for recording at the doctor's office.

With this situation, Dr. Merriman said, it appears possible that a doctor would know exactly the type of activity his heart patient should avoid.

For example, the device might record the fact that the heart was under stress on one occasion one day. Checking, the doctor learns from the patient that he'd climbed a flight of stairs quickly. The doctor then cautions the patient to avoid this type of stress.

Of course, it's common today for a doctor to give a known heart patient such advice. But, explained Dr. Merriman, in many cases, all the presently available tests have yielded normal results and still it's not definite to the doctor that his patient has or has not heart trouble. With the electronic unit monitoring a person's activity constantly, the doctor knows for sure when the heart is acting up, and the cause. He can then make recommendations on the type of life that should be led.

It may be all right for patient A to play golf, but patient B better stick to watching the game, Dr. Merriman said.

In tests with athletes that are continuing on a regular basis, Dr. Merriman and his colleagues are getting a good idea of what the normal heart can do, and they are learning something of the benefits of exercise to the heart.

Among the questions to be answered are:

What is the normal heart rate response during exercise? How does the response of an athletically untrained but healthy person differ from that of a well-trained athlete? Does training improve the efficiency of the heart? How does the heart respond immediately before the starting signal in an important race?

Dr. Merriman made it plain that "we have obtained preliminary observations only."

However, he said, "we believe that there are definite differences between the athlete in condition and 'not in condition.' In some athletes the heart rate increases to 188 per minute during strenuous exercise. There are definite differences in the heart rate response to exercise between athletes and non-athletes. In addition, we have observed different patterns of heart rate response to exercise which have not been previously reported.

"It is our hope that with an improved system we will be able to answer some of the questions put forward above, in addition to developing similar miniaturized equipment so that patients with heart disease may be continuously monitored during their daily activity," he said.

The entire investigation is of such significance to the School of Physical Education that the School became involved as one of its main research projects. In addition to its top personnel participating in the testing, it will see that certain of its students become involved. Extensive studies are now in progress, with athletes exercising in the Cardio-Pulmonary Laboratory on a treadmill. The information obtained from these studies will be correlated with the observations obtained during outdoor track activity.

The heart research is the direct result of the University's decision last year to take advantage of the contributions medicine and engineering can make to each other. The University set up a lectureship in bio-medical engineeering, the first of its type in Canada. Mr. Holmlund was appointed to the position, and acts as a liaison between the Colleges.

The light equipment used in the experiments was designed and built in the College of Engineering under the direction of Mr. Cobbold. The College will be responsible for developing more advanced units.

Dr. Merriman presented a paper on the research at the National Council Medical Meeting held recently in Saskatoon. The Cardio-Pulmonary Laboratory is supported by the Saskatchewan Heart Foundation.

DEPARTMENT OF HEALTH & PUBLIC WELFARE

# COMMUNICABLE DISEASE PICTURE

**North of 53 District**

No communicable diseases were reported.

**Northwestern District**

Reports were received of five cases of infectious hepatitis and one case of scarlet fever.

**Northern District**

One case of infectious hepatitis was reported.

**Brandon District**

There were eleven cases of infectious hepatitis and five cases of scarlet fever.

**Central District**

One case of infectious hepatitis was reported.

**Winnipeg District**

Reports were received of 52 cases of infectious hepatitis and 17 cases of scarlet fever. Four cases of bacillary dysentery were notified and one case of meningitis — due to other and unspecified causes.

**Southern District**

One case of whooping cough was reported.

## LIST OF DEATHS FROM COMMUNICABLE DISEASES
**February, 1961**

URBAN: Cancer, 80; Diarrhoea & Enteritis, 3; Influenza, 1; Pneumonia Lobar (490), 3; Pneumonias (other forms), 31; Tuberculosis, 2. Other deaths under 1 year, 18. Other deaths over 1 year, 336. Stillborths, 18. Total, 492.

RURAL: Cancer, 21; Diarrhoea & Enteritis, 1; Influenza, 1; Pneumonia Lobar (490), 1; Pneumonias (other forms), 10; Tuberculosis, 1. Other deaths under 1 year, 7. Other deaths over 1 year, 113. Stillbirths, 6. Total, 161.

INDIANS: Diarrhoea & Enteritis, 1; Pneumonias (other forms), 1. Other deaths under 1 year, 1. Other deaths over 1 year, 2. Total, 5.

### Unorganized Miscellaneous

There was one case of infectious hepatitis and one case of meningococcal infection.

### General

The incidence of communicable diseases was generally speaking quite low. Infectious hepatitis was however prevalent with a total of seventy-one cases reported. There appears to be a considerable incidence of scarlet fever and twenty-three cases were reported.

## Detailmen's Directory

Representing Review Advertisers in this issue, whose names are not listed under a business address.

**Arlington-Funk Laboratories, division U.S. Vitamin Corp. of Canada, Ltd.**
Ed Lessor ..... HU 9-1841

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